Public Concerns Regarding the Proposed Crandon Mine & DNR Responses

A Summary of Public Comments and Questions
from the June 19, 1997
Public Meeting at **Green Bay**, Wisconsin,
with DNR Responses

Wisconsin Department of Natural Resources
Bureau of Integrated Science Services
P.O. Box 7921
Madison, WI 53707

September 8, 1997

Table of Contents

Introduction

The Department of Natural Resources (DNR) wishes to thank all of the citizens who attended the June 19 public meeting at the Green Bay Public Library. As was intended, the Department received many comments and questions during the meeting. Many of these questions raised issues that the DNR intends to analyze before publication of the Draft Environmental Impact Statement (DEIS).

Additional information is available in a number of recently updated mining information sheets available from the Department's Rhinelander (call Cathy Cleland at 715-365-8997) and Madison (call Shannon Fenner at 608-267-2770) offices. These are: *Potential Mining Development in Northern Wisconsin, The Cumulative Impacts of Mining Development in Northern Wisconsin, How a Mine is Permitted, Local Decisions in Mining Projects, Protecting Groundwater at Mining Sites, Reclamation and Long-term Care Requirements for Mine Sites in Wisconsin, How the Department of Natural Resources Regulates Mining, Addressing Public Concerns with Wisconsin's Laws Governing Mining,* and *Wisconsin's Net Proceeds Tax on Mining and Distribution of Funds to Municipalities*.

For a comprehensive description of how mining is regulated, refer to: *An Overview of Metallic Mineral Regulation in Wisconsin,* by Thomas J. Evans, published by the Wisconsin Geological and Natural History Survey (WGNHS) as Special Report 13, 1996 (revised edition). The document is available from the WGNHS office in Madison (phone: 608-263-7389).

The following pages contain DNR responses to the questions and comments that arose at the public meeting. By reviewing the videotape of the meeting, the Department has made an effort to include each comment. In the instances that several individuals asked similar questions, an attempt was made to accurately capture the essential meaning in a single paraphrased question. Of course, with the number of comments received, it is possible that one or more questions have been accidentally overlooked. This is not the Department's intent, and any questions not answered within this document should be sent to Bill Tans at the following address: Bill Tans (SS/6), Department of Natural Resources, P.O. Box 7921, Madison, WI 53707. The questions and comments are written in bold type, and the Department responses follow each question in regular type. Where Wisconsin Statutes or Administrative Codes are paraphrased, the reader is advised to check the original language if more complete information is desired.

Regulations & Regulatory Authority

Tribal Water Quality Standards

1.

Q: The Environmental Protection Agency (EPA) recently withdrew high water quality standards from local Indian tribes. Is that reversal due to this proposed mine to weaken Indian tribes effectiveness?

A: The EPA withdrew its approval of water quality standards for the Oneida Tribe and the Lac du Flambeau Band of Lake Superior Chippewa after serious allegations arose regarding improprieties by EPA staff who participated in the approval of those standards. EPA's withdrawal of its approval is unrelated to the Crandon Mining Company's (CMC's) proposed project.

2.

Q: How do Mole Lake's water quality standards for Treatment as State (TAS) come into play for the permit process?

A: Because TAS is an evolving concept, the law is not altogether clear on how TAS would come into play. Each affected party, including the Tribe, local municipalities, the Department, the Crandon Mining Company, the Army Corps of Engineers, and the EPA, may answer the question differently.

The concept is that a tribe's water quality standards would have equal legal standing to that of a neighboring state. Although the state in which the discharge is located is responsible for issuing the permit, a neighboring state or tribe can comment to the issuing state as to whether or not the discharge will comply with their water quality standards when that discharge enters their jurisdiction. Thereafter, how the neighboring state's or tribe's comments are taken into account would be somewhat dependent on the circumstances associated with the project.

It is unclear how Mole Lake's water quality standards might affect the Crandon Mine. Even if the tribe were to develop enforceable, scientific standards to comply with the Clean Water Act, TAS only becomes relevant for point source discharges. The Wisconsin River discharge would not be enforceable under TAS (since it is not close to the reservation), but surface water mitigation proposals (for instance, to Hemlock Creek) might fall under that category. Also, TAS is only relevant to surface water discharges, not to groundwater discharges. This issue is currently in litigation, and it may take several years for the courts to make a decision. At this time it is impossible to know what the implications TAS will have to the Crandon permit review process.

3.

Q: Why would the State of Wisconsin be opposed to the higher water quality standards of the Oneidas? The water is ultimately for all of us.

A: The issue ultimately revolves around who has jurisdiction to set and enforce water quality standards. The State of Wisconsin, through its Attorney General, maintains that the responsibility belongs to the State of Wisconsin, not the Tribes. Through past decades the State has taken the same position in relation to actions by cities and counties. The State has litigated in Wisconsin's Supreme Court its position that the State, and the State only, has responsibility over waters within its boundaries, even when the local government's regulation appeared to be more stringent than that of the State's.

4.

Q: DNR (Department of Natural Resources) mandate is to "protect the most sensitive species," etc. How is "protect" defined - by laws? Rules?

A: Our authority to protect water quality from toxic substances is contained in Ch. NR 105 and NR 106, Wis. Adm. Code. We use numeric toxicity criteria, which represent the concentrations at which in-stream toxicity occurs, resulting in death or adverse impacts to species using the water. Criteria for toxic substances are developed by conducting biological monitoring toxicity tests using at least eight species such as trout, bluegill, fathead minnow, water flea, dragonfly, and crayfish. Other species associated with a particular stream or lake may be added on a case-by-case basis to protect them. Based on these scientific studies, the criteria is based on protecting the species most sensitive to a given toxin. Which species are most sensitive varies depending on the toxic substance and on the chemistry of the water to which a discharge is being proposed. This procedure is intended to protect all species by protecting the most sensitive species from toxic substances.

There are five types of toxicity considered in establishing effluent limits: (1) acute fish and aquatic life, (2) chronic fish and aquatic life, (3) wildlife, (4) human health, and (5) human cancer. (*Acute* addresses immediate impacts to fish and aquatic life, such as death. *Chronic* addresses more long-term effects such as growth or reproductive difficulties.) A toxic substance may have more than one associated criteria if there is more than one type of toxicity associated with a substance. For example, mercury has 4 different criteria because it has toxicity levels related to acute (830 ng/L), chronic (440 ng/L), wildlife (1.3 ng/L), and human health (1.5 ng/L). In this case, wildlife is the most sensitive to mercury, so the limit used is 1.3 ng/L because that concentration is necessary to protect wildlife from bioaccumulating adverse amounts of mercury.

5.

Q: How have surface water standards changed since this project began?

A: There have been some changes in chs. NR 105 and NR 106, the administrative codes which contain the surface water quality standards and procedures for calculating limits. The revised administrative code became effective August 1, 1997. It replaces the existing codes from February 1989. These revisions were made to Wisconsin's regulations to adopt the requirements of the Great Lakes Initiative (a cooperative agreement between the Great Lake States and EPA to assemble the most up to date scientific information on persistent toxic chemicals in the Great Lakes). Based on this information, the toxicity criteria increased for some substances while others decreased. In general, however, the changes made to Wisconsin's administrative codes were minor. Although the initiative was intended to address Great Lakes concerns, most of the changes apply to all state discharges.

In addition to the above, there have been a number of streams reclassified, including the Wolf River, which is now classified as an Outstanding Resource Water. No mining-specific changes have been made.

Recycling

6.

Q: Governor Thompson proposes to eliminate funding for recycling programs - which hurts metal recycling efforts. Is this an effort to support the mining of virgin ore? Has the DNR Board taken a position on this budget proposal in support of recycling? If not, why not?

A: It was the State Assembly, rather than Governor Thompson, that proposed to end state funding for local household recycling programs. Household recycling pertains primarily to newspapers, corrugated cardboard, tin and aluminum cans, glass, and to a certain extent, used oil. Households do not typically recycle zinc or copper, the metals at issue here. Households do recycle lead acid batteries, however, those have a mandated recycling system through the commercial battery retailers and should be unaffected by the status of recycling funding. We believe there is no connection between the proposed reduction in recycling funding and metallic mineral mining. As a matter of general policy and practice, the Natural Resources Board does not take positions regarding proposed legislative initiatives.

Mining Moratorium Bill

7.

Q: Is the DNR permitted to take a position on the Mining Moratorium Bill? If able to do so what might that position be?

A: The DNR testified at the hearing in Ladysmith on Senate Bill 3, referred to as the Mining Moratorium Bill. The attached letter (Appendix A) dated July 8, 1997, from William Ford, Senior Staff Attorney with the Wisconsin Legislative Council, outlines the Department's position on SB 3. Also, see Response #18.

Mining Project Permitting Authority

8.

Q: Whose permission does Exxon need to put this mine in? DNR? Crandon? Governor Thompson? Indian Tribes? The local Chippewa and Menominee are the most affected. What happens if any <u>one</u> of these denies permission? Address each. Please also list all municipalities that have a say in whether the mine goes in. How many individual permits are required for the mine to open?

A: In order to begin mining, CMC needs approvals and/or permits from several federal, state, and local government entities. At the Federal level, the U.S. Army Corps of Engineers must issue drainage or fill permits for activities affecting wetlands or navigable streams. Also at the Federal level, the EPA must accept a spill prevention control plan before operations can begin, and must concur with the DNR's proposed wastewater discharge permit before it can be issued. At the State level, the Department of Transportation must approve the pipeline corridor through road rights-of way (see Appendix B for a map of the proposed pipeline route). The Public Service Commission (PSC) must approve the electric transmission and natural gas line routes. The Department of Natural Resources, however, is the primary permitting authority at the State level. The following permits and approvals are needed from the DNR before construction can begin:

- Mining permit (includes approval of erosion control, environmental monitoring and reclamation plans, and risk assessment and contingency plan)
- High capacity well approval (includes potable water supply and mine de-watering approval)
- Chapter NR 30 permit(s) (for stream crossings by roads, pipelines and rail lines, etc.)
- Wastewater treatment plant approval
- Wastewater discharge permit (for treated wastewater and surface mitigation water)
- Air quality permit
- Approval of Forest County's county forest land withdrawal
- Approval of a surface water mitigation plan
- Approval of the Feasibility Report & Plan of Operation, and tailings management area (TMA) operating license

At the local level, only governments with zoning authority over some aspect of the project have a "say" in whether the project can proceed. This includes the Towns of Lincoln and Nashville in Forest County, which contain the mine site. The City of Crandon has limited zoning authority over the project due to the proximity of the Crandon airport. Additionally, Forest County has approval authority based on the withdrawal and subsequent replacement of County Forest lands. Oneida County may have zoning authority over the pipeline route. The Town of Crescent in Oneida County, although it has no zoning authority, owns the right of way for the currently proposed pipeline route for a brief stretch along Hat Rapids Road.

All of the entities with zoning authority must grant permits in order for the project to proceed. If any one of these authorities denies permission, the project could not be built and operated. As of this writing, the Towns of Lincoln and Nashville, the City of Crandon, and Forest County have given their approval to the project through the signing of local agreements. Response #11 addresses the adoption and application of the local agreement law. Since none of the activity is proposed to take place on tribal land, the Tribes have no permitting authority over the project. Governor Thompson has no direct oversight or authority over the final decisions.

9.

Q: As far as I know, the Chippewa Tribe has been outspoken against the mine. Has the tribal government officially declared itself against the mine? Will that stop the project, or will the DNR find some reason to deny them this authority?

A: The Department has received written correspondence from several tribal authorities in northeast Wisconsin that they oppose the development of the proposed mine. We are also aware that the various tribal bodies and tribal members have publicly stated their opposition to the proposed Crandon mine. Under existing state law, however, tribal authorities in Wisconsin have no regulatory authority over the proposed Crandon mine.

Department staff are familiar with tribal concerns, which include potential impacts to Rice Lake and its wild rice crop; potential groundwater contamination of Wolf River tributaries, and the Wolf River itself, by the tailings that would be disposed in the tailings facility; and air contamination by windblown dust coming from the tailings TMA; among other concerns. These concerns will be addressed in the Environmental Impact Statement (EIS).

10.

Q: Why did the Town of Nashville grant permits? Isn't this premature if the state and federal permits have not been issued?

A: Since the Department is not a part of the local agreement process, questions regarding the terms of the local agreements or of permits issued by local municipalities can best be addressed by the local officials involved. State mining permits can not be issued by the Department without proof that appropriate local zoning codes have been complied with. Accordingly, it is necessary that local governments make their decisions before the state makes its decisions.

A local agreement is not a prerequisite to the granting of zoning approvals, but often a local agreement is signed with language indicating acceptability of the project under current local zoning codes. This can vary from agreement to agreement. In the absence of a local agreement, the local zoning authority must act on zoning requests by following the normal review and appeal processes established in the zoning ordinance. The local agreement does give the governmental unit an ability to negotiate terms which would not be available through the normal zoning process. No terms of the local agreement could violate state laws or regulations.

Laws Pertaining to Mining

11.

Q: How many laws have been changed to accommodate mining companies in the past 25 years?

A: There have been periodic law changes in the past 25 years which affect metallic mining. Whether or not these laws "accommodate" mining companies is a subjective judgement. This response compiles all relevant changes, without attempting to determine which were beneficial and which were detrimental to mining companies; in this way, the reader can make his or her own determinations. The following list of changes does not contain the changes to air quality, surface water discharge, or other environmental protection laws that apply to most mining projects, but instead focuses mainly on the mining law changes.

In 1977-1978 Legislative Session, the Wisconsin Legislature passed legislation which overhauled the state's regulation of the mining industry. It created ch. 107, Wisconsin Statutes, which addresses issues associated with who owns mineral rights and how exploration leasing is to be conducted.

In chapter 31, of the Laws of 1977, the Wisconsin Legislature changed the method by which mining operations are taxed. The revised system applies a tax on the net proceeds (profits) of mining operations, in addition to the other taxes that all Wisconsin corporations must pay. This change has resulted in allegations that this new taxation system does not generate as much revenue for the state as the previous system would have. Depending on the nature of a given mine, such claims may have merit. A highly profitable mining operation would likely generate more tax revenue under the present net proceeds tax than under the previous system, but a low profitability mining operation might well generate less tax revenue from those taxes applied only to mining operations.

The much more significant legislation was the adoption of Chapter 421, laws of 1977. This Act was a major revision of the Metallic Mining Reclamation Act initially adopted in 1973. The product of Act 421 is still called the Metallic Mining Reclamation Act, or more commonly, the mining law. That act substantially increased the degree of state regulation over mining, principally, as the name suggests, in terms of reclamation. Printed out single-spaced on letter sized paper, the Act runs almost 40 pages. It is too voluminous and complex to explain in this document. However, citizens are encouraged to refer to

Special Report 13 of the Wisconsin Geological and Natural History Survey and the several Mining Information Sheets prepared by the Department for more comprehensive descriptions of the regulatory requirements for metal mining in Wisconsin (please see the Introduction section of this document for details on ordering these documents).

One aspect of the Act is worth highlighting in this document, however. Section 293.93 reads as follows in its entirety:

> **Effect of other statutes.** If there is a standard under other state or federal statutes or rules which specifically regulates in whole an activity also regulated under this chapter, the other state or federal statutes or rules shall be the controlling standard. If the other state or federal statute or rule only specifically regulates the activity in part, is shall only be controlling as to that part.

This section mandates that any air emission from mining operations be regulated by the statute which controls all other air emissions in the state. Mining-related wastewater discharges are regulated by the statute that controls all other wastewater discharges in the state. Disposal of mining wastes is regulated by the statute that controls waste disposal, not the mining statute. The same is true for most other mining-related activities.

Mining is subject to the same regulations as other industries, with two notable exceptions. One has to do with loss of wetlands. The Legislature allowed mining companies to cause the loss of wetlands, although it specifically mandated that such losses be minimized. Somewhat different standards apply to non-mining activities. The second exception deals with groundwater quality standards. When the Legislature passed the groundwater law—several years after it had passed the Metallic Mining Reclamation Act—it provided that mining companies need not comply with the groundwater standards mandated by that statute, so long as the groundwater standards applied under the mining law protected the public interest. The Legislature did so recognizing that groundwater was already being regulated at mining sites in a manner which was consistent with that being implemented under the new groundwater law.

In the twenty years since adoption of the Metallic Mining Reclamation Act, there have been several non-substantive amendments to the Act, such as reflecting a change to a cross-referenced statute, or renumbering of the statutes. These changes are not discussed in this answer. What follows are those changes to the Act which have occurred since 1977 and which do have substantive implications.

> **Act 221, Laws of 1979**, clarified the issues to be addressed at the Master Hearing, and specifically stated that the changes were procedural only and did not affect the substantive requirements that had been in place. The Act also amended the law dealing with prospecting, which is an activity that would precede actual mining, including a provision which allows mining companies to keep confidential the information they have obtained through their prospecting efforts.

> **Act 353, Laws of 1979**, created additional liability for mining companies above and beyond those already specified for other corporations. It applied the concept of "strict liability" to aspects of mining operations, which means that a mining company is liable regardless of whether the injury was due to negligence. Also, this law created an additional fund, called the mining damage claim fund, to accommodate certain claims of personal injury and property damage related to a mining operation.

Act 355, Laws of 1979, charged the Metallic Mining Council (created by Act 377, Laws of 1977) with the responsibility of advising the Department on adoption of administrative rules and on mining projects.

Act 86. Laws of 1981, expanded the list of activities for which the Department is empowered to adopt administrative rules. The authorization included the establishment of groundwater standards and standards for dealing with radioactive wastes. It also authorized the Department to provide for exemptions, modifications or variances from Department mining rules, so long as the result of an exemption, variance or modification "does not result in the violation of any federal or state environmental law or endanger public health, safety or welfare or the environment." This is the only authorization to grant exemptions or variances under the mining law. And, it applies only to agency rules; there is no authority for the Department to grant variances or exemptions from any aspect of the mining law, itself.

Act 517, Laws of 1983, changed the definition of "abandonment of mining" such that adverse market conditions could allow a mining company to cease operations for up to 5 years [10 years for mines approved prior to 1983] without being considered to have "abandoned" the mine. However, the statutory amendment also stated that during the period of cessation, the mine has to be maintained in an environmentally stable manner and reclamation activities must continue.

Act 399, Laws of 1987, created the law which allows municipalities possessing zoning and land use authority to negotiate and enter into local agreements with mining companies. It should be noted that the language of that statute makes such agreements voluntary on the part of both mining companies and municipalities. While the Act made such agreements possible, the negotiation, adoption, and enforcement of such an agreement is the sole responsibility of municipality. The Act does not provide for a state role.

Act 259, Laws of 1991, required that an environmental impact statement be written for any metallic mine for which the Department receives an application. Prior to that Act, mines were subject to the same requirements as other projects. That law states that a project of any kind that is of significant state concern requires an environmental impact statement, but other projects do not. Act 259 declared any metallic mine, no matter what size or what impacts it may have must have an environmental impact statement written prior to action on the permit applications. This Act also expanded the list of municipalities that can enter into local agreements with mining companies.

Act 260, Laws of 1991, expanded the authority of the Department to consider information on the environmental track record of an applicant for a mining permit. It specifically allows information on certain environmental violations over the previous 10 years to be considered by the decision-maker in rendering a decision on a mining permit. While this Act tried to place additional requirements on companies and individuals seeking to mine in Wisconsin, many people consider the law to be of questionable effectiveness.

Act 377, Laws of 1995, changed the requirements regarding provision of proof of financial responsibility. Owners of solid waste disposal sites, including mining waste disposal sites, were, under the existing law, responsible for maintaining proof of financial responsibility for 40 years following closure of a disposal site. After that 40 year period, the requirement no longer existed

unless a special circumstance existed. Act 377 changed the requirement as it applied to mining operations, to make the owner provide proof of financial responsibility forever, unless after 40 years the owner is able to make a case that it should be released from that responsibility. In effect, the law removed the burden from the state to show that proof of financial responsibility is required after the 40 year period, and placed the burden on the mining company to show why such proof would no longer be needed.

The DNR's Permit Review Process

This Meeting

12.

Q: Why wasn't this meeting better advertised?

A: When we began our series of public meetings on the proposed Crandon project in April, we announced in news releases that we would be holding several meetings, and named the cities and dates. We also announced our public meetings on our call-in phone number (608-267-7534). Several weeks before each meeting, we again released specific information to the local radio and print press media. How the press utilized our information differed each time. We regret that some of you may not have had sufficient lead time before our public meeting. However, we always will respond to phone calls or letters of inquiry. In addition, our series of detailed meeting summaries from the public meetings in Ainsworth, New London, Crandon, Wausau, Tomahawk, Green Bay and Rhinelander contain a wealth of information on the project and how we will be regulating it and should remain a useful record of each meeting well into the future.

Payment of Associated Costs

13.

Q: Crandon Mining Company permit applications triggered the DNR to hire 15 consultants. Who is paying for DNR staff time and the costs of these consultants for this work? Who pays their salaries and benefits? How much has this review cost the taxpayers over the past 20 years? What amount of money has Exxon actually paid to the State of Wisconsin? Please answer with specific numbers.

A: The Crandon Mining Company must reimburse the state for the costs to review the permits and prepare the environmental impact statement (EIS), including all consultant costs. EIS and consultant fees, which the company has paid, total more than $610,000 through the first quarter of calendar year 1997. The permit-related fees, which currently total more than $1,000,000, will be paid by the company at the conclusion of the project. These fees must be paid whether the permits are granted or denied.

DNR's Workload

14.

Q: Have DNR activities in any other areas (geographic or topical/media or system) been reduced by the redirection of resources to respond to the Crandon Mining Company proposal? If so, what is being done to get the DNR back to the agenda it would have had without this proposal?

A: The legislature has designated the Department as the state agency regulating metallic mineral mining as well as solid waste disposal, air quality protection, surface water quality, groundwater quality and protection of our other natural resources. In other words, the evaluation of permit applications such as the Crandon project is a significant part of the typical DNR agenda.

DNR Staff Decisions

15.

Q: You often use the word "will" instead of "would." Which is it? Shouldn't it be "would" consistently or only?

A: As we have stated at all public meetings in the spring and early summer of 1997, DNR reviewers need to complete a great deal of review work before anyone can determine whether this project could meet all the environmental protection requirements required by law. It might be late 1999 before permit decisions, either approvals or denials, can be made. Department staff at public meetings try to speak as accurately as possible, but sometimes we inadvertently use a word or tense that can cause a statement to be misinterpreted. The correct word to use is the conditional tense, "would."

16.

Q: When Bill Tans is on public radio, he regularly uses the phrase . . . What<u>we</u> have to do to get permits for the mine. . . Who is WE and does Mr. Tans have two jobs?

A: When Bill Tans, the Department's project manager for review of the proposed Crandon Mine, speaks on radio interviews, the "we" refers to the Department of Natural Resources and the review work we are conducting. Department staff have no interest in the outcome of the project review, except to make certain that the reviews are conducted in a professional manner, consistent with scientific and engineering principles, and performed consistently with our laws and rules. Whether the mining project is approved or denied is not of consideration; what is important is whether the approved process and methods are followed, and that the significant environmental impacts are described in our environmental impact statement.

17.

Q: It sounds like the DNR is defending the mine proposal.

A: The state legislature established the existing mining laws that provide the framework for mining regulation in the state. Under current law, CMC is entitled to attempt to demonstrate that it can meet the environmental protection and other requirements of the mining laws and regulations. The DNR is responsible for implementing the mining laws. This responsibility includes reviewing the mining proposal and judging whether the project can meet the environmental protection requirements of the law.

The Department does not defend the proposals of CMC (nor any other company, agency, citizen's group, etc.), but we are legally obligated to make sure that everyone in the state is treated equally under the law, regardless of public opinion for or against a specific project. At these public meetings, the Department has attempted to present the company's proposal, the Department's findings on subjects that have been fully analyzed, and a status report of those items that are the subject of on-going studies. The Department is **not** defending the mining proposal, but has defended and will continue to defend the process of environmental review.

18.

Q: If Crandon Mining Company pays all of DNR's costs for reviewing the mine project, then all the DNR staff who work on this project depend on the project for their continuing jobs. It's in their personal best interest to support issuance of a permit (perpetual employment as mine regulators). If the moratorium passes, these DNR staff are unemployed. Couldn't this impact the attitude of DNR staff and ultimately their decisions? What assurance do we have that personal job security doesn't affect staff decisions?

A: DNR staff do not depend on the Crandon project for their jobs, and if a mining moratorium passes, we would not lose our jobs. Eventually the Crandon project review will be finished. It may be because permits have been granted or denied, it may be because of Legislative action, it may be due to a decision on the part of CMC to withdraw its application, or some other reason. Regardless of the reason, no DNR employees will lose their jobs. As noted in Response #14, a primary responsibility of the agency is to review permit applications for many types of projects. Following completion of their current assignments on the Crandon project, these employees will be reassigned to other projects.

The "Mining Moratorium Bill," or SB3, has a long process to go through before it "passes." It has passed the Senate and now awaits action in the Assembly Environment Committee. There probably will be hearings on this issue this fall. In order to become law, it must be passed by majority vote out of the Environment Committee, passed by the Assembly, and signed by the Governor. If it passes these steps without further amendments, the legislation as currently worded would impose specific conditions on sulfide mining in the state. A sulfide mine could not open unless another mine had operated for ten years without breaking any environmental laws, and a mine had been closed for ten years without violating any environmental laws.

As currently worded in the Senate version, the bill would **not** likely constitute a moratorium on mining. The Department, as the agency which would interpret the law, believes that the Crandon Mining Company would likely be able to locate examples of mines which would comply with all the criteria. Regardless, a "Mining Moratorium Bill" would not cause any DNR staff to be unemployed.
Any perception that DNR staff have little credibility because they would be willing to hide information about real dangers from the proposed mine, in order to "save their jobs," is false. Employees working on the Crandon Mine review process have been advised that they will be questioned at the Master Hearing about how they arrived at their conclusions and that they should answer truthfully - including if they believe they have been directed to act contrary to their professional judgements. Wisconsin has a long history of open government, good civil service protection for its employees, a solid "whistle blowers" law and strong employee unions. Employees of the Department are in no danger of losing their jobs if they arrive at professional judgements contrary to the interests of Crandon Mining Company.

19.

Q: Considering the complexity and magnitude of their project is it humanly possible to accurately predict the ecological impact of their mine? How can you be objective on this assessment when the science involved in such an assessment is open to such a great degree of uncertainty?

A: Yes, it is possible to predict the ecological impacts of the proposed mine. In order to do this, and to help account for uncertainty in any predictions, we will use worst case or maximum impact scenarios and base our impact analysis accordingly. It is important to note that our regulatory authority limits the extent of the environmental impacts. As an example, if groundwater pollution is greater than anticipated at some time after operations begin, and it is clear that there would be a groundwater violation

if some intervention did not occur, then we would require the company to implement its contingency plan. This contingency plan would result in the problem being corrected, or the company could not continue its operations.

Our responsibility is to be as objective as possible. Department staff are professional scientists, and we have hired some very capable consultants to offer additional technical assistance. We seek the concerns of the general public through our public meetings and hearings and in the environmental impact statement process. Through the master hearing process we seek the input of tribal representatives, agency experts, environmental groups and individuals. All these voices will be heard in the process, and their substantive comments will be considered in the written decision.

20.

Q: How many of you (DNR) would be willing to live<u>with</u> your children and grandchildren around the mine site?

A: In order for the mine to be permitted, it must be demonstrated that the facility will not pose a threat to the health, safety or welfare of its neighbors. In addition, the proposed facility would have a fairly significant forested buffer zone around its perimeter which would mitigate the aesthetic impacts of the industrial complex. Assuming full compliance with permit requirements, the surrounding area would be at least as acceptable as the urban environment where the majority of our staff currently reside.

21.

Q: Everyone on the panel is citing much information. Where does this information come from - that is - who is doing the studies?

A: The information we have provided at the public meetings, which the Department will also use in its impact and permit reviews unless new or improved data is necessary, comes from a variety of sources. A great deal has been supplied (and in some cases augmented or redone) by the Crandon Mining Company. The raw data was generally gathered by a number of engineering and biological consultants hired by the company. This includes data on the chemical composition and depth of rock formations, mineral content of the ore body, detailed wetland surveys, the proposed extent of the mine workings, and groundwater flow data. Some of this data, especially that related to groundwater, was gathered under guidelines mandated by DNR. Much of the water quality data and some of the biological data was gathered by DNR as a routine part of surveys done under several resource management programs. Still other data comes from a variety of sources, including census files, tax records, and land records, which are all essential to socioeconomic reviews.

In all cases where non-DNR data is provided to the Department, DNR specialists have reviewed the methods used to gather the data, in order to ensure that the data is valid and objective for the purposes of the DNR review.

Permit Requirements

22.

Q: If Exxon does receive a permit in 1999 and does not mine for some years, 2020, and best available technology changes, or water quality standards are greater, how will this effect the permit?

A: Laws requiring changes in such things as water quality standards sometimes contain provisions that clarify which projects are affected by the law, but in other cases, new laws apply to all projects already permitted - so it would depend on the wording. Some permits that would apply to mining projects, such as the air quality permit and the wastewater discharge permit, are issued for a specific duration (for example, five years), and must be periodically renewed. If there was a reason to change the conditions of these permits, tighten some restrictions, add new restrictions or require more advanced technology, the Department could do it then.

However, if at any time after permits had been issued, the Department had information that significant, unexpected impacts were occurring to aquatic life, to groundwater resources, or to air quality, for example, it could initiate changes to permit conditions or alter the company's actions to minimize or eliminate the environmental problem.

23.

Q: If Exxon does receive a permit, how soon are they required to start operations?

A: If permits are granted, it is quite likely that there would be at least a several month delay prior to construction, as the company solicits construction contracts and develops some of the final engineering details of the project. If the permits are issued, some of them will specify that construction must begin within a defined time frame, such as five years. After this time the permit would be suspended and permit application documents and plans would have to be updated before construction could begin. Other permits, such as the wastewater discharge permit and the air quality permit, are only valid for a period of five years and would need to be renewed after expiration of that time.

The Master Hearing Process

24.

Q: How does the Army Corps of Engineers' schedule affect the DNR's schedule?

A: The U.S. Army Corps of Engineers' schedule does not affect the DNR's schedule; the two processes are entirely independent of one another. The U.S. Army Corps of Engineers has developed its estimated schedule for completing its environmental impact statement and permit decision by the end of 1998. While the Department's EIS will likely be completed before that of the Corps, our decision on the project will probably be about one year later due to our lengthy master hearing process. (See Appendix C for an approximate timeline.)

25.

Q: Will the "master hearings" be court-type proceedings? Will citizens' testimony be restricted to that dealing with <u>technical</u> issues relating to the draft EIS?

A: The Master Hearing has two elements to it. One allows testimony to be provided by citizens in a less formal way than in the other, which is more of a court-type proceeding. The statute directs the decision-maker to assign whatever weight to citizen testimony that appears appropriate.

As discussed at our meeting, there are many permits that a mining company needs to obtain to begin to mine. (See Response # 8.) The statutes and administrative codes that govern each of these permits set out the criteria that must be met for the permits to be issued. If those criteria are met, the decision-maker must issue the permit. If the criteria for a particular permit are not met, the application for that permit must be denied. Consequently the most important testimony will be that which deals with

whether or not the mine proposal complies with detailed statutory and administrative code criteria for obtaining permits. Some testimony on conformance of the applications with those criteria will not be of a technical nature, but to be effective it should focus on the controlling legal criteria. Testimony requesting the decision-maker to decide issues using authority that she or he does not have will be given little weight.

26.

Q: Who, specifically, will decide the "final written decision"? They <u>yes</u> or <u>no</u> of the permit?

A: Under state law, the Secretary of the DNR determines how the decision is made. He or she can choose from three alternatives for making the final decision following the hearing, based on the record of the hearing conducted by a hearing examiner. All Department hearings of the type required for approval of mining operations are conducted by a hearing examiner from the Division of Hearings and Appeals. That division is a state agency, separate from the DNR, which presently has between 25 to 30 hearing examiners who conduct hearings for eight other state agencies, including the DNR. A single hearing examiner will be selected by the Division Administrator of the Division of Hearings and Appeals.

The final decision is either made by the Department, the Hearing Examiner, or a recommendation is made by the Hearing Examiner and approved or modified by the Department. After our EIS is released, the Secretary will indicate how the decision will be made. As an example, the decision-maker for the Flambeau mine was the Hearing Examiner.

DNR Regulation of the Paper Products Industry

27.

Q: Regarding the DNR's lack of regulatory success when dealing with corporate entities, especially those chummy with Governor Thompson, why would anyone in this room imagine that you would protect the Wolf and Wisconsin Rivers from pollution? The DNR's abdication of responsibility for properly regulating the toxic discharges from paper mills, will now cost those mills $1-$4 billion in clean-up. The state hasn't been willing to hold the <u>paper</u> industry responsible for cleaning up the Fox River (11 year wait). The Federal Government had to step in to force everyone into action. Why should citizens have <u>any faith</u> that DNR would have the backbone to hold the <u>mining</u> companies responsible for their damages? The DNR's track record is very weak. Now the EPA has listed the Fox River as a Superfund Site, after 80 years of pollution, most of which were permitted by the Wisconsin DNR. How can Wisconsin citizens be assured that the permit process will protect their future?

A: This question is more of a political statement than an actual question, and has built in assumptions that are erroneous. There has been no "lack of regulatory success" under any gubernatorial administration, past nor present. Wisconsin's program for regulation of toxic discharges has been acknowledged by the Environmental Protection Agency as being one of the best in the country. All major wastewater discharge permits, especially those for paper mills, are thoroughly reviewed and approved by the EPA before the Department issues them. By state and federal law, those permits must comply with the requirements of the Clean Water Act before they can be issued.

The issues associated with cleanup of the Fox River are legally complex. The discharges which have been largely responsible for the contamination were not understood by either the state or the Federal Governments at the time they occurred. It was only long after the vast majority of the contamination had occurred that the scientific and regulatory communities became aware of the extent of the problems.

Further, these kinds of discharges were not unique to the Fox River. They occurred in many other places on the Great Lakes and across the country, with other state and federal agencies being similarly unaware of their consequences.

The state and the federal governments continue to discuss, on a weekly basis, how best to achieve a cleanup of the Fox River. The principal participants for the federal government are the Fish and Wildlife Service and the EPA, with assistance of the federal Justice Department. At the state level, discussions are conducted by representatives of the Department and the Office of the Attorney General, which is in complete agreement with the Department on the best courses of action to follow to most quickly and efficiently achieve an acceptable level of cleanup.

Some clarification is warranted regarding use of Superfund by EPA. While EPA proposed listing the Fox River as a superfund site, it has not chosen to actually do so as of this time. In fact, it has signed an agreement with the Wisconsin Department of Natural Resources which calls for the Department's efforts to be combined with those of EPA. In fact, the state work to date is acknowledged to be the foundation for much of the federal action.

DNR Regulatory Responsibility

28.

Q: Why does the DNR persist to entertain the Crandon Mine being built at all when most documented authentic information decisively prove that the mine will totally destroy our Wolf River/Fox River northern Wisconsin environment?

A: The Department by law must complete its review process, unless the applicant withdraws from the process. Department staff working on the environmental impact review have a lot of work to complete before any conclusions can be made regarding the impacts of the proposed mine. There has been a lot of printed opinion making dire predictions about the probable impacts of the proposed mine, much of which is based upon events in other types of geological settings or under little or flawed regulatory review. Thus far, we have not discovered any information based upon a rigorous, objective scientific review, that would lead us to conclude that the Wolf/Fox River system would be significantly impacted, much less totally destroyed. If we do conclude that development of the proposed mine would result in an unavoidable violation of state environmental protection standards, then we could not issue the permits necessary for mining to begin.

29.

Q: If the State changes the rules in the middle of the game, would the State be liable for damages to Crandon Mining Company?

A: Generally not. Legislatures are in the business of changing laws. Administrative agencies also need to update their regulations. Whenever a statute or administrative code changes, there is likely to be some person, municipality, or industry "in the middle of the game." At the same time, one goal of government should be to provide as much certainty as possible to the citizens it regulates regarding the standards they will have to meet should they undertake a project. That means not changing the "rules of the game" more often than is necessary. Finally, this answer assumes that what an agency does is legal.

30.

Q: Why did Bill Tans say that the DNR was "pretty much" as concerned about the environment? Why not as concerned?

A: As the agency responsible for implementing and enforcing the state's natural resource laws, the DNR is definitely at least as concerned about the environment as the public. As the Department's mission statement clearly states, the DNR works "to protect and enhance our Natural Resources - our air, land and water; our wildlife, fish, and forests; to provide a clean environment and a full range of outdoor opportunities." As noted in Response #10, Department staff at public meetings try to speak as accurately as possible, but sometimes we inadvertently use a word that can cause a statement to be misinterpreted.

31.

Q: What influence, if any, has Governor Thompson's support of the Crandon Mine Project have on the permit process? There is a story/rumor by people in the government/DNR that as long as Thompson is Governor, the mine is a definite go no matter what the DNR and public say. Your comments?

A: Although the Secretary of the DNR is appointed by the Governor, this does not mean that DNR employees are influenced by Tommy Thompson. Employees working on the Crandon Mine Project have been advised that they will be questioned at the Master Hearing under oath about how they arrived at their conclusions and whether they have been directed to act contrary to their professional judgements. Wisconsin has a long history of open government, good civil service protection for its employees, a solid "whistle blowers" law, and strong employee unions.
The Governor has absolutely no involvement in the review process for the Crandon Mining Project. Employees of the Department are in no danger of losing their jobs if they arrive at professional judgements contrary to the opinions of the Governor. The final decision regarding the Crandon project cannot legally be influenced by the Governor.

Through public meetings and the environmental impact process we seek and use public comments on the project. However, if the proposed mine is found to meet all environmental protection standards, comply with all applicable laws, receive local zoning approval and minimize impacts to wetlands, the Department must issue a mining permit. The statutes do not allow the Department the option to deny a mining permit under such circumstances. If it is determined that the mine cannot comply with all our laws and regulations, the Department must deny the permit. Public acceptance of a proposed mine cannot be considered by the Department in reviewing a mining proposal. There is no "popular vote" (nor any "Governor's vote") built into the statutes that guide our environmental review of projects, including mining projects.

As in all projects, the DNR Secretary has directed that this project be reviewed in a thorough and impartial manner, with no bias for or against the project. In addition, the DNR has hired knowledgeable, independent consultants to review the information provided by CMC and its consultants. The Department is fully aware of public concerns regarding political influence in this process. We want everyone in this State to understand that our review has been, and through the end of this process will always be, based solely on the best science possible. There will be no other influences allowed to affect the permit review and development of the EIS.

32.

Q: Does the public give any credence to your decisions?

A: The Department makes several different kinds of decisions daily, with widely varying impacts. For purposes of providing a response we will first consider permit decisions, which are generally less publicized than resource management decisions, but which have legal authority. The means for people to show their belief that DNR permit decisions are not acceptable is to oppose them during the prescribed legal appeals processes. While no central statistical data base exists, DNR legal specialists estimate that each business day, staff from many programs throughout the Department may make more than 100 permit decisions that could be challenged in court. Each year, very few legal challenges are initiated against these decisions.

The Department also makes many decisions annually regarding resource management and resource protection policy, such as in setting water quality and air quality standards, issuing grants for development of outdoor recreation facilities, establishing seasons and quotas for fishing and hunting, and purchasing lands for public recreation sites and natural areas. One way of demonstrating a lack of faith in the Department is to oppose these types of decisions. In these cases, Department staff generally work closely with citizen groups or boards who represent large numbers of people who have a stake in the decision. Again, and in this case due in large part to the working relationships between the Department and affected citizens, very few of these types of decisions are challenged.
Based on these observations, it is safe to conclude that most people in the state place a lot of credence in Department decisions.

Wastewater Treatment & Discharge Pipeline

Proposed Treatment Process

33.

Q: Ladysmith is pointed to as a success. How much water was treated at the Ladysmith mine and returned to the river per day? How many gallons would be treated per day at the CMC mine?

A: The Flambeau Mine in Ladysmith discharges an average of 466,000 gallons per day from its wastewater treatment system. The estimated average discharge from the Crandon Mine's proposed wastewater treatment system would be 806,400 gallons per day.

34.

Q: Why isn't the mining company required to treat all of the water and reuse it for mitigation - in other words, why have a pipeline at all?

A: The mining process results in an excess of water due to pumping water from the deep underground mine, and the excess water must go somewhere. The ideal solution would be, as the question suggests, to use all of the water pumped from the mine as surface water mitigation water. However, there is a timing problem - the mine must be pumped continuously, but there will be only a seasonal need for surface water mitigation. There are other considerations also, such as the quality of wastewater treatment water and groundwater compared to the quality of needed surface water mitigation water. The surface water mitigation needs have not yet been fully evaluated.

35.

Q: Why hasn't Exxon even mentioned a water treatment plant that would put out water clean enough for the Wolf River? If the treated wastewater is not clean enough for the Wolf River, why are we dumping it into the Wisconsin River and denigrating that river?

A: The DNR can't specify to any discharger the location of a proposed discharge, but instead must analyze whether the location selected by the permit applicant is acceptable based on state statutes and administrative codes, and if the proposed level of treatment would meet the effluent limits. The Department has no authority to require a discharger to meet limits more conservative than those required at their chosen discharge location. The level of required wastewater treatment is dependent upon the use classification of the receiving water. The Wolf River is an Outstanding Resource Water (the highest water quality classification), so any discharges to it must be of higher quality than a discharge to the Wisconsin River. This is because the Wisconsin River is of a lower use classification (a warm water sport fish water).

If CMC proposed a discharge to the Wolf River system, it would require a very expensive and sophisticated treatment system. Such a system would be costly to operate, consume a lot of energy, require complex monitoring, and would be less reliable than the more conventional treatment systems. Based on these criteria, and following its analysis of alternative discharge methods and sites, the company chose the Wisconsin River as its proposed discharge location. The Department must now analyze this proposed discharge to see if it would comply with all relevant laws and regulations.

The Potential for Environmental Impacts

36.

Q: If the water in the Wisconsin River became contaminated would the <u>whole</u> river be affected?

A: The Wisconsin River is designated as a Fish & Aquatic Life Water for water quality purposes. This water quality designation means that no discharges of wastewater are allowed that would significantly affect even the most sensitive organisms in the river or that would affect recreational opportunities in the river. This means that a permitted discharge would not contaminate the river even within the zone where the discharge mixes with the river water.

Contamination of the river by an unpermitted and unforeseen increase in pollutants in the discharge is very unlikely. The discharge water would be monitored at the wastewater treatment plant and in the holding ponds, before being discharged, to test whether it meets the required discharge standards. If monitoring shows that the standards were being exceeded, the mining company would have to treat the water again in the treatment plant at the mine site, until the discharge water meets standards.

If the Wisconsin River did become contaminated by some sort of accidental spill, the extent of contamination would depend upon the nature and amount of the pollutant, flow conditions, weather events, and other factors. Many pollutants bind to soil particles and would settle out into the sediment of the first flowage downstream of the contamination site. Others volatilize or evaporate as they pass downstream on the surface of the water. Still others would dissolve in the river water and be carried a long distance.

The proposed average wastewater discharge flow (approximately 500 gallons per minute or gpm) would be very small compared to the average river flow (337,500 gpm). At the proposed maximum discharge rate of 1,200 gpm, the low flow in the Wisconsin River (136,400 gpm) is more than 113 times greater. Thus, an accidental discharge would probably have only local effects due to the high rate of dilution. In addition, because of required monitoring, any accidental discharge would likely be of short

duration, further limiting the affected area. Pollution from uncontrolled sources, or in massive quantities from poorly regulated or unregulated activities, can travel far downstream. The proposed facility would not be comparable to those examples.

37.

Q: When this mine would be in operation, it would be pumping a million gallons of water out of the mine to be sent through a pipe across thirty or so miles of land. It is logical that the pumping could not be stopped or the mine would fill with water. This would be a potential disaster waiting to happen, if the pipe broke, spilling millions of gallons of contaminated water over the land. Nothing is forever, the pipe could break. Then what?

A: Contaminated water would not be allowed to enter the pipeline. Under the current proposal, treated wastewater would be pumped to one of two holding ponds. At these ponds, testing would occur. If the water passed the tests (meeting surface water quality standards), it could then be released to the pipeline. If it did not pass the tests, it would be returned to the treatment facility. Excess volumes could be pumped into the tailings pond. Effluent not meeting standards would indicate some type of problem at the treatment facility; this problem would have to be resolved before any water could be released. The water would meet all drinking water standards except for sulfate (the drinking water standard is 250 mg/L and CMC's pilot wastewater treatment study showed 900 mg/L) and selenium (the drinking water standard is 50 µg/L and CMC's pilot wastewater treatment study showed 110 µg/L). Because the effluent must meet Wisconsin River water quality standards before it could be pumped across the landscape, it would cause little, if any, harm in the event of a major leak.

The wastewater treatment permit would require flow monitoring by CMC, which would occur at 3 locations - at the discharge from the treatment plant, at the booster pump station around the half way point near Monico, and at the point of discharge into the Hat Rapids Dam. The pipeline would be equipped with continuous flow monitoring devices. A telemetry system would send data to the plant control room for continuous monitoring, and flow values at these locations would be compared to one another in order to monitor for leaks. Should drops in operating pressure and leaks be detected, the company would be required to stop pumping and repair the problem.

The discharge could be stopped by shutting off the pumps which pressurize the pipeline. Because the pipeline varies in elevation, all of the wastewater couldn't flow out by gravity once the pumps are stopped. The pipeline would be 38 miles in length, so the wastewater would be in the pipeline an estimated 2.4 days while it is pumped over this distance.

The Pipeline

38.

Q: How will easement and purchase arrangements be made for the pipeline to the Wisconsin River?

A: The proposed pipeline would be located almost entirely within State, County and Town road right-of-ways. Negotiations for the highway easements would be with the Wisconsin Department of Transportation and the county and town boards. Negotiations with private landowners would include the right-of-way for the last segment of the pipeline at Hat Rapids Dam, which is owned by the Wisconsin Public Service Corporation of Green Bay.

39.

Q: Why is the size of the wastewater pipeline such a deep dark secret?

A: Some information on the pipeline is contained in the "Preliminary Engineering Report for Wastewater Treatment Facilities." We don't yet have final design information. Those details probably wouldn't be provided for our review and approval until the decision to issue a permit is made. The Crandon Mining Company has indicated the pipeline material could be plastic (polyvinyl chloride or high density polyethylene) or epoxy coated steel. The diameter of the pipe would depend on the pipe material. It could range from 10 inches to 16 inches in diameter. Regardless of the pipeline size, the maximum discharge from the pipeline would be limited to 1,200 gallons per minute in the permit.

The Inter-basin Transfer of Water

40.

Q: Does the DNR have authority to authorize the transfer of water from the Great Lakes watershed to the Mississippi watershed? Don't other states have a say in the matter? Would this constitute a precedent for other proposals to export water from the Great Lakes?

A: Interbasin diversions are regulated under s. 144.026 of the Wisconsin Statutes and Chapter NR 142 of the Wisconsin Administrative Code, in response to the Great Lakes Charter. Under these provisions, diversions of greater than 5 million gallons per day out of a Great Lake basin requires an application and approval of the Great Lakes states and Canada. Under that same statute, a person proposing to divert Great Lakes water is required to obtain a permit from the DNR only if the diversion exceeds 2,000,000 gallons per day. Since CMC proposes to divert 886,000 gallons per day, none of these approvals are required.

In 1986, Congress passed the Water Resources Development Act. This Act prohibits diversions of any amount of water from the Great Lakes without prior approval from the governors of all the eight Great Lakes states. However, this law applies only to surface water diversions as interpreted by the Army Corps of Engineers (see Appendix D).

The proposed interbasin diversion for the Crandon Mine wouldn't set a precedent. Several municipalities, including Portage and Kenosha/Pleasant Prairie, discharge wastewater to different watersheds from that which they obtain their water. The City of Chicago obtains its water supply from Lake Michigan but discharges its wastewater to a river that enters the Mississippi River. Some industries, such as breweries, use Great Lakes water in their products, which are subsequently shipped out of the area, constituting a loss of water to the Great Lakes.

41.

Q: How can you legally distinguish between surface water and groundwater?

A: We recognize that ground and surface waters are indeed interconnected. However, the history of water regulation has been to address different kinds of waters differently. The Great Lakes are regulated differently from inland lakes in this state. The dominant law in this country affecting water quality is the Clean Water Act, but that act applies to surface waters only, not groundwater. These are just a few of the many instances in which legislative bodies have determined that the public interest is best served by acknowledging differences between types of waters.

Wisconsin's statute which regulates inter-basin transfers of water does not distinguish between surface and groundwater. However, our Legislature specifically stated that no such transfer, be it of surface water or of groundwater, requires a permit from the state unless the transfer exceeds 2 million

gallons per day. The Crandon Mine transfer would likely be well under the legislatively established amount for which a permit is required.

Energy Usage

42.

Q: Public Service Commission (PSC) staff said that the White Pine Mine required as much energy as two base load power plants (250 Megawatts each). How much energy will be used for this project? Will the EIS provide details of the projected energy usage by this mine, and the resulting air pollution and other environmental impacts? (Whether it comes off the grid or new local generators.)

A: The energy usage of the White Pine Mine, which includes a smelter, is not comparable to energy usage of the proposed Crandon Mine. Energy usage at the proposed Crandon project is projected to be 20.5 MW at peak demand. According to the PSC, this amount of energy would be available from the already existing grid. Therefore, the construction of additional, dedicated power generation facilities would not be required. The EIS will indeed provide more details on the proposed mine's energy usage.

Ore Smelting

43.

Q: Where will the ore be smelted? This is a critically important part of the EIS - serious air pollution could be created and the energy consumption can be substantial. Even if smelting doesn't occur in Wisconsin the impacts should be included in this EIS. (A "what if" scenario.) Green Bay has been seriously considered as a smelting site in the late 80s for this mine - the public should not be blind-sided later. What will prevent Crandon Mining Company from applying for a smelting permit after the other mine permits are granted? (A smelter is an integral part of mining. It's dishonest not to include this issue in the EIS.)

A: Existing smelters will continue to operate at the level necessary to supply the world demand for metals regardless as to whether this mine is permitted or not. The source of the smelter feed has little impact on the smelter air emissions or energy consumption rate. Since the time of the initial discovery, the owners of this ore body have consistently indicated that they would sell the concentrates on the open market. No new smelter at Green Bay or any other location has been seriously proposed as the result of the discovery of this ore deposit, because the amount of ore at Crandon would not justify construction of a dedicated smelter. In the absence of any information regarding the potential smelting location, or the need for additional smelter capacity, any discussion regarding smelting impacts would be merely speculative. Moreover, a smelter operating in another state or country would presumably already have completed environmental and permitting reviews.

Groundwater Modeling & Groundwater Drawdown

Modeling

44.

Q: Why hasn't the DNR created its own regional flow model? Aren't you working in ignorance? Can't the company lead you in any direction they want to go?

A: The standard procedure for most Department permit reviews is to require applicants to do the work to make their permit applications complete and to demonstrate that the project would meet all applicable standards. This work is done under Department oversight as necessary and is then completely reviewed. This process places the burden on the applicant. We have chosen to use the same approach here because the mining company has substantial resources that it can devote to producing an adequate and complete model which we can then take and modify as needed to complete our analyses. The company's consultants have been using a model called MODFLOW, which was developed by the U.S. Geologic Survey (USGS). Hydrogeologic data and assumptions developed by the company's consultants were placed into the model. The Department is now analyzing those data and assumptions. The Department's examination may result in a change in these assumptions, which could result in projections of impacts different than the company's.

45.

Q: Has the DNR previously completed a groundwater modeling project of this magnitude and is able to demonstrate with data that the models were in fact correct?

A: The only project of a similar magnitude that the Department was involved in which included groundwater modeling was the Milwaukee Deep Tunnel project. The Department has been involved in several groundwater modeling projects surrounding proposed solid waste landfills, spill clean-ups, and the development of well-head protection areas. The consultants that we have working with us from the Wisconsin Geological and Natural History Survey, the US Geological Survey, and the University of Waterloo have worked on many extensive modeling projects.

It is important to recognize that a model is only a tool to be used to *assist* in solving a problem or answering a question. A model will almost never be exactly right and we do not expect it to be. We can, however, use a groundwater model to help us better understand the groundwater system in the area of the project, identify areas where additional information is needed, and provide estimates of impacts from the project. The impact estimates, which are important for the decision-making process, will be done in a manner to ensure that they are conservative and that they capture the range of uncertainty.

46.

Q: The Department of Energy did a study on using Wisconsin for a radioactive waste repository, and they couldn't tell how water moves through the bedrock interface. It is known how the regional groundwater works, and how the surface water works, but how the water runs through the base rock is not known. Have you gotten that information since this report was published in 1985?

A: The question refers to a set of documents published by the U.S. Department of Energy, Office of Civilian Radioactive Waste Management, in August of 1985 that studied the possibility of siting a high-level radioactive waste repository in crystalline bedrock in the North-Central Region (Minnesota,

Wisconsin, and the Upper Peninsula of Michigan) as a part of a national investigation. Specifically, the information the question cites is in a report entitled North Central Regional Geologic Characterization Report (DOE/CH-8). As the title of the report indicates, the intent of the work that DOE did in the early 1980s was to look at an entire region for potential repository sites. The work did not focus in detail on site-specific information in Wisconsin or any other state in the north-central region - that was to be the next step.

The DOE study noted that information about the movement of groundwater through fractured crystalline bedrock was limited. It was known how the regional groundwater flow system works, and how the surface water systems work, but how the water moves through the crystalline bedrock was at that time not as well understood.

Since then we have learned a lot more about how groundwater behaves in fractured rock in general and in the fractured crystalline rocks in the area of the proposed mine site. There is no question that we understand the hydrology of the surface-water systems and the near-surface, or unconsolidated glacial, groundwater system much better than we understand the hydrology of the crystalline bedrock groundwater system. However, at this time, we believe enough is known about how this system works for us to evaluate impacts from the project and make reasonable and appropriate permit decisions.

47.

Q: Why isn't there a better graphic on the groundwater in the proposed region?

A: We are continuously working on developing better graphics. More detailed graphics will be contained in the EIS. If anyone has ideas of the types of graphics that would be helpful in promoting public understanding of this proposed mining project, please let us know.

48.

Q: When do you estimate you will have adequate flow projections to complete the modeling?

A: We are working on our review of the mining company's groundwater flow modeling. We hope to be largely finished with our review of their work by early this fall. At that point we will begin developing our predictions of impacts from the proposed project. At this time, we anticipate being finished with that work late this fall.

49.

Q: Don't all the "holes in the ground" for water modeling and ore prospecting create lots of opportunities for air and water exposure (acid formation)? Doesn't this mess up the modeling predictions?

A: Improper drilling methods and improper well design, construction, maintenance and abandonment can allow surface contaminants (such as agricultural or urban runoff) to move downward. In the case of multiple confined aquifers, this can also allow poor quality water to move upward into producing aquifers. This is the reason that the Department licenses and regulates the design, construction, operation, maintenance, and abandonment of water wells, monitoring wells, and mineral exploration wells. All of the water wells, monitoring wells, soil borings, and exploration drillholes constructed as part of the CMC project are in conformance with state construction standards. Many have been permanently abandoned, which means that the hole has been completely sealed from the bottom to the top with neat cement or other approved sealing material. The remaining open holes are protected with proper casing and

well seals or welded caps.

Although the DNR is careful to regulate for the aforementioned concerns, acid formation from the transmission of air to the sulfide minerals via the drilling holes is not possible. Most of the monitoring wells and all of the water wells are not in geological formations containing sulfide mineralization. Furthermore, exploration holes that remain open only move through sulfide mineralization at the bottom quarter of their length. This is well below the water table, and, consequently, exposure to oxygen is limited by the presence of water. To prevent any movement of drillhole water into the upper glacial aquifer, all of the exploration holes have steel casing set into the bedrock. Under these conditions, the minor amount of acid rock drainage that could be generated would easily be buffered by the other available natural minerals and any other potential contaminants would not be transported to the upper glacial aquifer. Eventually, all of the holes will be permanently sealed. Should the company default on this responsibility, the Department holds a reclamation bond to cover the cost of exploration drillhole abandonment.

Drawdown

50.

Q: What is the source of the mitigation water?

A: There are three potential sources of mitigation water: intercepted (uncontaminated) mine water, treated mine wastewater, and pumped groundwater. Use of the first two water sources would reduce the water to be pumped through the pipeline to the Wisconsin River and it would limit the additional impacts from pumping wells for mitigation water. The Department's complete analysis of the mitigation plan will be included in the Draft Environmental Impact Statement (DEIS).

51.

Q: Have drawdown estimates of this magnitude ever been tested elsewhere? How accurate were their projections? Isn't this highly speculative?

A: Drawdown predictions are made using numerical groundwater flow models fairly commonly as a part of de-watering efforts for construction projects, mine and borrow pit development, and groundwater remediation. There is uncertainty in all of those predictions and that uncertainty must be accounted for in the development and use of the results. Modeling is just a tool to be used to help develop an understanding of the groundwater system and to help solve problems. For the assessment of the proposed mine, we have to be sure that we have reasonably accounted for the uncertainty by being conservative in our estimates of mine inflow, water table drawdown, and water losses from area lakes and streams. These conservative estimates will then be used in our assessment of the project and development of the EIS.

52.

Q: You spoke of contingency plans with drawdown. If your studies show there will be a minimum drawdown, the mine gets its permit and then the drawdown is 5 or 10 feet, will you remove the permit? How will cottage and home owners be compensated, should their lake levels drop 5-10-20 feet?

A: When we complete our groundwater impact studies, we will have estimates of the amounts that lakes and streams in the project area would be impacted. If these projected impacts are significant, that is, if we predicted that they would affect public rights such as navigation, fishing, or aesthetics, the

company must prepare a plan to mitigate the surface water impacts. The Department must then assess that plan; the assessment will be included in the EIS. In other words, the company would not be allowed to draw down lakes, springs or streams 5, 10, or 20 feet. If drawdown was more than predicted, it would be mitigated according to permit requirements.

Mine Inflow

53.

Q: The 1985 EIS predicted a mine inflow of 2000-3000 gpm. How without a working model can you predict a maximum inflow of 1400 gpm?

A: Our best guess at this time - without completing our work on the flow model - is that mine inflow would be within the range of 700-1400 gpm. This estimate was made by CMC through use of a groundwater flow model. We know enough about the model at this point to believe that it is likely not to be too far off. However, we reserve final judgement until we complete our work on the flow model.

The 1986 EIS actually predicted a worst-case mine inflow of 1,200-2,000 gpm. This was done using a combination of models that are much less sophisticated than the model being used in the current review process. In addition, substantial additional data about the site area has been collected and included in the modeling. Therefore, a difference between the two predictions is not unexpected at all.

54.

Q: The timetable schedule is based on science (as stated by a speaker). What is the science that accurately predicts the change of mine inflow water when ore dynamiting occurs and the crusher is hammering at the bottom of the lift shaft?

A: The schedule for completion of our review is driven by our need for additional information from the company and the time required to review that information and develop our analyses. We have required the company to provide an assessment using rock mechanics of the changes likely to occur in the bedrock due to mining (developing openings, blasting, etc.). We are in the process of reviewing that work.

The Connection Between Lakes and Groundwater

55.

Q: Exxon and its consultants have argued there is little, if any, connection between the lakes and the groundwater system drawdown. There is disagreement to this statement by an independent groundwater expert hired by the former Public Intervenor. How do you approach this conflict?

A: The Department recognizes that the groundwater and surface water are intimately connected. The company's groundwater flow model predicts that there will be very little effect on the area lakes from the drawdown. Many of the participants in the groundwater technical meetings, including the Department, are not sure that prediction is reasonable. We are presently working on our review of the groundwater modeling and have not yet developed our own predictions.

At the end of this process, in the Master Hearing, we expect that there will be several divergent opinions expressed regarding the effects on area lakes from the drawdown. At that point the decision maker will have to assess those opinions and reach a conclusion.

56.

Q: Aren't many of the lakes and rivers in the drawdown area perched? If so, won't the affect on them be minimal? I believe many of the lakes have silt and muck bottoms and are sealed off from the lower aquifer.

A: The upland lakes (those nearest the proposed mine site located on the upland area - Deep Hole Lake, Duck Lake, Skunk Lake, Little Sand Lake, Oak Lake) all have a substantial thickness of lakebed sediments over much or all of their bases, with the exception of Skunk Lake. Only Oak Lake, however, appears to be perched. The rest of the lakes are in direct connection with the groundwater and are situated as mounds on the groundwater table. None of the lakes, however, are completely "sealed" from the regional groundwater system. All of the lake levels are higher than the regional groundwater system, and thus the lakes seep water into the regional groundwater.

Earthquakes

57.

Q: What about earthquakes? The last major New Madrid quake in 1813 lasted nearly one month, rang church bells in Boston, and was felt as far north as Hudson Bay. Insignificant odds? Once is enough. The report of the Department of Energy (D.O.E.) has an earthquake of a 5.5 magnitude just east of Crandon and Mole Lake. It is not remote.

A: There are some inaccuracies in the question. The earthquake mentioned likely refers to a series of quakes originating in New Madrid, Missouri, nearly 500 miles south of Crandon, in 1811 and 1812. Regardless, the potential for earthquakes damaging the proposed tailings facility must be completely assessed in the review process. Based on information currently available, contrary to the statement in the question, there is only a small likelihood of a moderate earthquake (Magnitude = 4 to 6) in northern Wisconsin. Northern Wisconsin is located in an area which experiences little earthquake activity, although the New Madrid seismic zone lies to the south and the St. Lawrence Valley seismic zone lies to the east. However, several small earthquakes have been detected with epicenters in Wisconsin (the closest being several tens of miles to the east of Crandon).

Even if a moderate earthquake were to occur in the area of the proposed mine, significant ground motion would have to occur at the waste facility before the liner or final cover would be damaged. Earthquakes originating outside the immediate area would be a concern if the Crandon area experienced significant ground motion. However, seismic hazard potential maps prepared by the U.S. Geological Survey, as a part of the National Earthquake Hazard Mapping Program, indicate that northern Wisconsin does not have a significant risk of major ground motion. Small to moderate earthquakes do not normally result in significant ground motion; therefore, the liner and cover should survive without any major problems.

58.

Q: In the 1980s, the Army Corps of Engineers study of the Crandon area revealed a possible earthquake fault line. What safety procedures will Exxon do to guarantee a toxic spill would be prevented and contained?

A: There are many ancient faults located in the area of the proposed mine site. There are no known faults that have been active since the last glaciation (about 10,000 years). To the best of our

knowledge most of the ancient faults in the area were last active in Precambrian time (greater than 650 million years ago). Our analysis thus far indicates that seismic risk in the area is very low (see Response #57).

The potential for other accidents leading to a spill of toxic materials used on site certainly exists. The company must have in its mine plan procedures to minimize the risk of any contaminant spills. The mine permit application must have a reasonable risk assessment and a contingency plan for dealing with events that have a significant chance of occurring. The contingency plan must be reviewed and approved by the Department as a part of the Master Hearing.

The Tailings Management Area (TMA)

The Liner

59.

Q: According to Jerry Goodrich, recently retired president of the Crandon Mining Company, the plastic liner underneath the toxic mine waste will dissolve in 140 years. How will this condition be addressed and by whom? "All landfill liners leak eventually," - you can even find that acknowledged in the Federal Register. What does Crandon Mining Company propose to do to clean up the area and groundwater<u>when</u> the liner leaks?

A: The liner system, with the exception of the geomembrane, is expected to be permanent. All of the soil materials used in the liner and cap, including the bentonite clay in the GCL (geosynthetic clay liner), are expected to be unaffected by age. Although CMC used a worst case scenario of a 150 year liner lifespan for an input into their groundwater model, these geomembranes are predicted to last for centuries. In order to be approveable, the proposed design must provide for compliance with groundwater standards to a high degree of certainty under simulated worst case conditions.

All liners, including natural clay liners, will leak to some degree - but only tiny amounts if installed correctly. Potential worst-case leakage rates resulting from the proposed design have not yet been determined, but will be part of the Department's analysis and will be included in the DEIS when completed. If the facility is predicted, by modeling, to exceed groundwater standards at the compliance boundary or property line, whichever is closer, the proposed design cannot be permitted.

Once the tailings facility is closed and the original ponded water is drained, the facility cover (not the liner) would be the key to ensuring that an acid drainage problem does not develop. If there is little water percolating into the facility, there would be little water draining out of the bottom of the facility. The cover would limit access of both water and oxygen to the tailings. Without both, acid drainage cannot develop. Since the cover is near the surface and relatively accessible, it could be repaired or replaced as necessary.

If this project is permitted, it would have an extensive environmental monitoring program that would require detailed groundwater and surface water monitoring on and around the facility. In addition to groundwater and surface water monitoring, the mine and tailings facility would be monitored closely to make sure they are performing as designed and predicted. This monitoring should quickly detect any significant discharges of contaminants to groundwater or surface water. At that point, a clean-up program would be initiated. Depending on the type of release, clean up could involve repair of the tailings facility, installation of cutoff walls, pumping of groundwater for treatment or to control movement, installation of reactive walls (material which would intercept the contaminant and change its chemistry, so that the substance is no longer a threat to groundwater quality), or many other techniques.

60.

Q: Where has the geosynthetic clay liner been successfully used to contain the tailings from a sulfide mine and concentrating mill?

A: We have not tried to do a survey of all the mining projects in North America. From the recent projects we are aware of, it appears that the design of the CMC TMA is more elaborate than those developed for other tailings or waste rock disposal sites. Our contacts with the major geomembrane producers and installers and some of the major consulting firms indicate that GCLs are becoming more common in the mining industry. Where GCLs have been used by themselves, their use seems to be mainly for final cover systems. GCLs are more commonly used in conjunction with geomembranes as part of composite liners. We have found that the State of Montana, for instance, has approved several remediation projects where GCLs have been used to confine and cover relict sulfide mining wastes. The longest and most frequent use has been in heap leach pads, usually for gold or copper, where they are used to replace natural clay in composite liners.

It should be noted that GCLs would not be used by themselves for the CMC TMA.They would be the middle component of a composite liner, sandwiched between a well-graded till layer and a 60 mil polyethylene geomembrane.

61.

Q: How can you evaluate a synthetic liner's proposed effectiveness in terms of how long it is said to last and in terms of the feasibility of replacement of a failed synthetic liner?

A: Geomembranes have been subjected to immersion tests at various temperatures using concentrated solutions of organic chemicals most likely to cause defects. These tested samples of geomembrane are then tested for tensile strength. Higher temperatures accelerate the effects that chemicals might have on geomembranes. Polymer chemists can use the data from such tests to extrapolate how long a geomembrane would be expected to survive contact with the same chemical at in-service temperatures in landfills or lagoons.

Laboratory tests do not show the feasibility of replacing a geomembrane in the field. That is determined by evaluation of the design and experience from actual site construction. In practice, we expect that the liner is most repairable when it is first put into use, when there is only a few feet of waste on the leachate collection system. At that point, there are some remote sensing methods that can be used to determine if the geomembrane has defects.

The geomembrane in the final cover system will be more accessible. In the longer term, the barrier layer and drain in the final cover are more important than the liner in terms of preventing any impacts to groundwater (see Response #59, third paragraph). We anticipate requiring inspection and testing of the final cover.

For both the liner and final cover, the greatest potential for damage to the barrier layers is during construction of the barrier layer and placement of the initial layers of soil or waste over the barrier layer. After that, barrier layers are generally well protected from the mechanisms that can damage them.

62.

Q: What is the estimated monetary cost if the tailings pond should leak, destroying the Wolf-Winnebago River systems?

A: Wisconsin's mining legislation and other environmental protection laws are designed to

prevent serious water quality deterioration in the state's waterways. If rivers in this state were threatened with loss of quality by any proposed activity that DNR regulates, including mining, that activity could not be permitted. DNR staff are dedicated to protecting water quality to the extent permitted by state law. We realize that with this proposed mine there exists the potential for serious long-term harm to water quality. That is why we are being extremely rigorous and cautious in our review. DNR staff have made many requests for new information from CMC, and have suggested or required numerous changes to the mining project design and operation through this stage in our review of the project. Our full analysis of potential impacts from the project will be included in the EIS.

63.

Q: A 10% failure of the toxic waste liner is acceptable by the DNR. What does that mean to people's drinking water?

A: We do not use a 10% failure rate as a criterion and do not know where this figure came from. (On another note, the tailings are not toxic wastes as defined by the Toxic Substances Control Act, and it is confusing to refer to the wastes generated by CMC as toxic.) We would be concerned about any failure of the TMA or, for that matter, of the water retention ponds, waste rock storage pads, reclaim pond, etc.

Our technical review activities are aimed at more than assuring that the design and construction of the lined facilities are acceptable. As part of our review, we will also be defining requirements for monitoring and evaluating the lined facilities during construction, active use, and following closure to determine if defects are developing, whatever their rate of development. Since groundwater would be monitored close to the TMA, both during operation and after closure, any detectable groundwater impacts will require additional investigations and possibly corrective action by the company.

64.

Q: This Pre-Cambrian seam of zinc, copper, etc. is one billion years old, it is said. What about the integrity of these tailings management zones even 100 years from now?

A: It is obvious from observation of the local topography that hills and hillslopes have survived since the last ice age, as long as the cover vegetation was intact and drainage was available. This includes above-ground glacial features such as drumlins, some of which naturally have heights and sideslope lengths comparable to the TMA. There are some manmade earthwork structures in climates similar to that in Wisconsin that have survived for hundreds or thousands of years. We expect that the TMA should survive for many centuries if protective measures, including vegetation and drainage, are built into the management plan.

Operation

65.

Q: When the leachate is drawnfrom the bottom of a filled cell (33,000 gallons/day for total of 4 cells), what replaces this withdrawn leachate (remember air is 20% oxygen)?

A: The leachate collection system would be partially saturated, once pumping of tailings begins. We expect that some atmospheric air would be drawn in along the sideslope drain as leachate is pumped out. However, it is unlikely that the oxygen content would stay at 20%, since some oxygen would be consumed in tailings oxidation and some would be displaced by carbon dioxide released from the tailings

mass. (The source of the carbon dioxide would be the carbonate added as part of the mill process water.) As the tailings mass increases, there would be less movement of atmospheric air through the cells.

66.

Q: Merely limiting the amount of oxygen that gets to the tailings is certainly no guarantee of prevention - with 220 acres of tailings, should there not be a higher standard than limiting? Any chance is not worth the risk!

A: The TMA does not need to have an absolute barrier to any air or oxygen from reaching the waste mass. It simply has to keep oxygen entry to a low level. It is not essential to completely seal the tailings off from contact with air in order to prevent serious acid rock drainage. Limiting contact between the tailings and oxygen can be successful in slowing the acid-producing chemical reactions. This method would limit the production of acid to an amount and a concentration that could be diluted sufficiently by the groundwater it enters so that groundwater quality standards are met.

67.

Q: If you surround the tailings with limestone you will only reduce the concern, not eliminate the concern?

A: Limestone would be mixed with the tailings in the upper several feet of each cell. The limestone, or any other acid-neutralizing additive, is intended to be a temporary measure, to keep the tailings pH in the alkaline range until the available oxygen below the cap is used up. In the long term, the presence of any residual limestone is not important, since acid-producing changes in the tailings would be controlled by the final cover system.

68.

Q: Are the tailings ponds built to treat the tailings so someday they will be safe and environmentally not a hazard or are they just a holding area to be there for eternity? Will this area forever after be unusable?

A: Both. The tailings cells are permanent disposal sites. The operation of the cells includes removing leachate, adding limestone as necessary, and consolidating and covering the tailings, which are all measures intended to prevent the tailings from being an environmental hazard.

The TMA could be used for purposes which do not involve penetrating the capping layer in the final cover, interfere with maintenance actions such as leachate pumping and monitoring, or cause erosion or other damage to the final cover or sideslopes. Crandon Mining Company has not indicated that they plan to use the TMA area for any particular purpose, and, since the property is privately owned, there is no reason to expect that the TMA area would ever be allowed to be used for other human activities. However, if proper controls were maintained, some activities would be compatible with the TMA.

Design

69.

Q: The elevation of the TMA berm is 1725 feet. The surrounding area is approximately 1625 feet. Is it fair to say the containment system would extend above the surrounding area?

A: Yes. However, the increase of elevation would vary, since the site has a somewhat rolling topography and also slopes toward the west. On the west side of the TMA, the total height above the original topography would be somewhat greater than 100 feet, whereas on the east side of the TMA, the change in elevation would be as little as about 20 feet in some areas. Along the northeast side of the TMA, the final topography would be about 20 feet lower than the existing surface elevation.

70.

Q: Has the tailing management system proposed by Crandon Mining ever been used successfully at any other sulfide mining site? If so, where?

A: Please see Response #60. CMC's TMA design is comparable to the designs of current solid waste landfills. Geomembranes and GCLs, often used together as composites, are increasingly used or required in designs of disposal sites for tailings or waste rock. Geomembranes have been used in the industry for the past 20 years or more and GCLs first became popular about 10 years ago. Thus, there are limits to our ability to show projects that have been in place for a long period of time. What we can say is that lined facilities for any waste type have turned out to be highly effective in preventing groundwater contamination, as long as the construction was suitable. We do not expect the TMA contents to be a greater challenge to effective containment than the many other waste types that American industry has had to deal with.

It should be noted that GCLs would not be used by themselves for the CMC TMA. They would be the middle component of a composite liner, sandwiched between a well-graded till layer and a 60 mil polyethylene geomembrane.

71.

Q: Solid waste landfills are frequently built today with double liner and leachate collection systems. Given the hazards of the tailings, why not so with this project?

A: The majority of solid waste landfills across the US are built with single liner systems, with most of the recent municipal solid waste landfills are built with single composite liners. New York State and a few others allow or mandate the use of double liner systems. Also, federal and state rules have required double liners for hazardous waste landfills for some years now. However, hazardous waste landfill requirements call for a single geomembrane for the primary (upper) liner and a composite of clay and geomembrane for the secondary (lower) liner.

Where states have allowed or required double liner designs, it is usually because of a perceived or actual lack of native clay in large regions of the state and lack of experience with the properties of clay as a barrier layer.

Double lined landfills are enormously difficult to construct successfully. The design of double lined landfills usually calls for a reduced thickness of the soil components of the liner systems, compared to single liner systems. Only a few double lined landfills have been built in Wisconsin, and their construction has been shown to be complex, difficult to coordinate, and easily subject to interruptions by weather. It is common for construction of double lined landfills to extend late into cold weather or to extend over two construction seasons, resulting in several months of exposure of the liner components to weather. All of these factors lead to doubt that double lined landfills can be built to the same standard of workmanship and

performance as single lined landfills.

Given the compromises that arise due to the complicated construction of double-lined landfills, our opinion is that there is a much better chance of successfully completing construction of the liner and leachate collection system if the design is kept simple. There is no advantage to the use of a double-lined landfill design if it leads to poorer liner construction.

72.

Q: It has been verified that several landfill caps of solid waste landfills have been breached by lightening strikes. What has Crandon Mining Company proposed in order to prevent/mitigate this?

A: The only reference we have seen on the subject of lightening strikes causing holes in landfill caps was an Internet item which seemed to be of doubtful authority. There are several solid waste landfills in this state that are as high or higher above existing ground surface as CMC's TMA would be, and they have not reported any problems with or damage to final covers due to lightening. We have canvassed Department staff, engineering consultants, and landfill operators, and none have any knowledge of lightening strikes causing any damage to either liners or final cover systems at landfills. We have had reports of lightening-induced damage to control panels or other electrical equipment, which result from electrical surges as well as direct strikes. This type of damage is not unique to landfills.

We have made inquiries with researchers into the effects of lightening when it strikes the ground. There is some evidence that lightening can penetrate several feet into dry, sandy soils, as the track can be traced by the presence of fragile, glass-like, narrow tubes formed from melting sand. Lightening seems to eventually dissipate as it encounters wetter soils. There is speculation on what happens to landfill caps when lightening strikes, but there has been no specific research on this topic.

It seems likely that lightening would strike the TMA sooner or later during active filling life or during or after closure. If lightening struck or affected mechanical equipment, such as the pump barge or return water pumps or controls, damaged equipment would have to be repaired or replaced. This type of activity is within the normal maintenance activities expected of the TMA.

If lightening struck the soil surface ofa covered cell, the electricity would be dissipated in the soil. It is possible that evidence of a strike could be detected by visual examination of the vegetated surface. A better approach would be a periodic examination of the integrity of the final cover using certain types of remote sensing methods that have been developed to examine covered geomembranes. We plan to recommend such monitoring in the overall site monitoring in any case.

CMC has not proposed any specific measures to prevent or mitigate the possibility of lightening strikes on the TMA. It is not clear what is the best approach to mitigate the effects of lightening strikes, assuming that continued research shows that this is a real problem. One practical approach to limiting lightening damage below ground surface seems to be to assure the presence of wetter soils near the base of the rooting zone. Research has found that the electrical charge in a lightening strike will disperse into wet soil or groundwater. The rooting zone soils on the TMA would be underlain by a drain layer. Since the rooting zone soils would hold more moisture than the drain layer, they would tend to dissipate the energy of lightening more than the drain layer could.

It is possible that larger lightening strikes could penetrate through the drain and the capping layer. If that were to happen, the hole in the soil left by the lightening strike would stay open for a short time before being filled in with soil particles from around the hole. The hole left by a big strike can vary but seems to usually be about an inch or less in diameter. Such holes would be points where additional water could leak through the capping layer. The result of any holes in the cap would be a minor increase in infiltration into the tailings.

The threat of lightening is pertinent to all landfills, not just Crandon Mining Company's TMA. There is little information currently available that addresses the potential for damage to landfill caps by lightening. However, the Department will continue to monitor the experience of landfills with lightening strikes, and will adjust the regulation of all landfills if information warrants a change.

Waste Characterization

73.

Q: Will the material in the dump site be toxic, and if so, how long? The DNR said the tailings are not classified toxic waste. This statement is very misleading to the public. The material pumped to the TMA - contains heavy metals, milling reagents, that are classified toxic.

A: There are quantities of heavy metals in the mine tailings and some materials classified as toxic in their original state are used in the milling process. However, the tailings and process water, as pumped to the tailings facility, do not test out as toxic and are not considered hazardous waste. The company is proposing to collect the liquid in the tailings facility as leachate, which would primarily be mill process water during facility operation, and reuse that liquid in the mill or treat it prior to disposal. The heavy metals contained in the tailings themselves are largely immobile unless the tailings become oxidized. The company is proposing to limit the occurrence of the oxidation process by capping the tailings with a final cover that is intended to restrict the movement of water and air (oxygen) - the primary ingredients necessary for acid drainage.

While not hazardous or toxic, the tailings from the proposed Crandon mine would be potentially reactive indefinitely. That means that should the necessary "ingredients" for acid drainage - oxygen and water - come in contact with the sulfide minerals in the tailings in substantial quantities at any point in time, acid drainage could develop. Therefore, maintenance of the tailings facility final cover would be essential.

74.

Q: Would this tailings site design meet the requirements in Wisconsin for hazardous waste landfill? What exactly are the differences between the hazardous waste regulations for landfills and this design.

A: The administrative rule for hazardous waste landfill standards is NR 660, Wis. Adm. Code, which essentially incorporate the federal hazardous waste landfill requirements. No hazardous waste landfills have ever been proposed or built in Wisconsin under this code. From examination of the rule, the following seem to be points where the NR 660 standards differ from those utilized in the CMC TMA design:

- **SS. NR 660.06(1)(g)** requires that a hazardous waste landfill be located where there is 30 feet of clay soils below the proposed base of the landfill. Effectively, this means building the liner within the groundwater table that exists within the clay stratum.

  The CMC TMA would be located in an area with very dense, granular, glacial till soils below the proposed base. A separation of 20 or more feet would be maintained between the groundwater table and the subbase of the liner.

- **SS. NR 660.18(6) and (7)** prohibit the disposal of bulk or noncontainerized waste liquids in

landfill.

The TMA, by the nature of the milling process, would accept hydraulically placed slurry and provides for the pumping of ponded slurry water from the top of the tailings mass.

- **SS. NR 660.18(11)(a) and (b)** require a double liner system and leachate collection systems above the upper liner and between the two liners. The primary (or upper) liner is required to be constructed of materials, such as geomembranes, designed to prevent migration of hazardous constituents into the primary liner. The secondary (or lower) liner is required to be a composite liner of at least two components, the upper component being a material such as a geomembrane and the lower component being a minimum of 5 feet of liner quality natural clay. The type of geomembrane is not specified.

  The TMA would have a three component single liner of one foot of graded and sieved till, a GCL, and a 60 mil polyethylene geomembrane.

- **SS. NR 660.18(11)(c)** requires a leachate collection layer of two feet thickness made of sand with a hydraulic conductivity greater than or equal to 1×10^{-3} cm/sec.

  The TMA would have a leachate collection system on the base of two feet of sieved sand with a hydraulic conductivity of 3×10^{-1} cm/sec, covered by 18 inches of sand filter layers. The lower sideslopes of the TMA would have a drain layer of made of geocomposite drain covered by 18 inches of unsieved till soil. The upper stage of each cell would have 18 inches of unsieved till covering the liner, which would act as a slowly permeable drain. It would also be expected to provide resistance to the entry of air into the leachate collection system.

- **SS. NR 660.18(16)** requires that surface water control features be designed for runoff volumes generated by a 25 year, 24 hour storm.

  The TMA would have surface water controls designed for a 100 year, 24 hour storm.

- **SS. NR 660.21(1)** requires a final cover design that includes, from the top down, a vegetated top cover of minimum of 2 feet thick and minimum slope of 3-5%, a drain layer of at least 1 foot thick and hydraulic permeability of not less than 1×10^{-3} cm/sec, and capping layer. The capping layer is required to have two components, an upper component not specifically described as a geomembrane and a lower component of two feet of compacted clay.

  The TMA has a proposed final cover design consisting of 3½ feet of topsoil and rooting zone, a one foot sieved sand drain layer with a hydraulic conductivity of 3×10^{-1} cm/sec, and a capping layer. The capping layer would be a three component structure consisting, from bottom to top, of one foot of well graded and sieved till, a GCL, and a 60 mil polyethylene geomembrane. Several feet of grading layer soils separate the capping layer from the top of the waste mass. The hazardous rule was written before GCLs came into common use and, thus, makes no provision for their use in hazardous waste landfill design.

Location

75.

Q: What is the possibility of locating the Tailings Management Pond to a different location - like outside of Forest County?

A: The possibility is low. Many factors determine the best location for tailings disposal. The TMA area is not particularly environmentally sensitive, compared to most of the other potential disposal site locations that have enough area, access, and soil resources to be useable. In terms of depth to groundwater, soil types, and ability to support weight, upland locations such as the proposed TMA site are clearly superior to the lowland areas. The geology and topography do not change substantially for many miles around the mine site area, so when considering a number of alternative sites, there are many good reasons to pick the one closest to the mine. The proposed TMA location appears to be as good as or better than the other candidate sites. Locating a disposal site in a lowland would not be approved because of the requirement to minimize wetland impacts, and lake beds cannot be destroyed by a mining project because they are held in trust for the citizens of Wisconsin.

The Department can reject a proposed site for cause, but under the law, the site selection process is the responsibility of the applicant. Specific site selection criteria spelled out in the law and regulations must be followed by the applicant during the selection process. The following is a brief summary of some of the more important siting criteria:

- the physical characteristics, geology, and hydrogeology of the site must support a design that would not result in a violation of surface water or groundwater quality criteria;
- the site must provide for a structurally stable design;
- the site must not be within 1000 feet of a navigable lake, pond or flowage;
- the site must not be within 300 feet of a navigable river or stream;
- the site must not be within a floodplain;
- the site must not be within 1000 feet of a state trunk highway unless screened;
- the site must not be within 1200 feet of a private or public water supply well;
- the site must not be located over a known mineral resource;
- the site must be large enough so that the exterior of the facility berm would not be within 200 feet of any property line;
- site selection criteria must include the minimization of disturbance to wetlands;
- site topography must allow for provisions for the diversion and management of storm water runoff around the facility;
- if practicable, the site should be located in the same watershed as the mine surface facilities.
- tailings pipelines should be as short as practicable;
- the site must not be within areas having the presence of endangered or threatened species unless these species can be firmly re-established elsewhere;
- archeological areas must be identified and protected; and
- the parcel must allow for a facility design which would meet all other local, state and federal rules and regulations, including local zoning requirements.

In addition to the above, there are some practical siting criteria that the company must consider, including the following:

- the land must be available from a willing seller;
- suitable access routes to the site must be available;
- the parcel must be large enough to contain most if not all of the waste, plus provide for up to 1200 feet of buffer area around the facility;
- splitting the waste facility into two separate sites could be considered, but three or more locations would probably be unacceptable because of the extensive network of pipelines and haul roads that would be required; and
- if possible, the site should contain enough suitable soil so that soil from off-site is not required for construction and reclamation.

The initial TMA siting process conducted by Exxon Coal & Minerals resulted in the selection of 35 sites, within approximately 12 miles of the mine site, which alone or in combination would be of suitable size. Approximately half of the selected sites were located in lowland areas and the Department advised the company that these were unsuitable due to wetland, groundwater and surface water considerations. The remaining sites were evaluated and ranked based on the above criteria, resulting in the final selection of the proposed TMA location. None of the other sites were found to have significantly superior soil, geologic, or hydrogeologic characteristics that would have resulted in additional protection of the groundwater or surface water. Documentation covering the investigation and site selection process is contained in several reports and is available for public review at the Department's regional headquarters in Rhinelander upon request.

Reclamation

76.

Q: Will the plants that attempt to root in the cover of the TMA be monitored and selected-out if they tend to have long tap roots, like oak trees?

A: While we have not completed our review of the proposed reclamation cap, it should be sufficiently thick to prevent roots from reaching the plastic geomembrane. Plant roots don't penetrate geomembranes unless there is a pre-existing opening and enough oxygen below the geomembrane to support the root. The proposed vegetation type for the TMA is a savanna, with scattered trees. A savanna would likely be maintained with fire or mechanical means to reduce the numbers and sizes of undesirable or invading trees. Herbicide application may be another alternative to kill undesirable trees.

Wetlands

77.

Q: Isn't it illegal in Wisconsin to affect wetlands?

A: Wetlands regulation in Wisconsin occurs through several administrative codes, which specify which wetland impacts are allowed and under what circumstances. Primary authority for wetlands regulation is with the federal government under Section 404 of the Clean Water Act. For most projects that would impact wetlands, the U.S. Army Corps of Engineers has permitting authority. The state has significant influence over federal wetland decisions through what is called state water quality certification. That is, before a federal permit can be granted, the state must certify that the project meets state water quality standards.

It is not true to say that it is illegal to affect wetlands in Wisconsin, since projects can be permitted if the project proponent can show that there is not a "practicable" alternative that avoids wetland impacts *and* that the project would not result in significant adverse impacts to wetland functional values. Projects that meet these legally established standards are permitted.

The laws protecting wetlands are different for metallic mining projects. In the current mining laws, the Wisconsin Legislature has agreed that due to the immovable nature of ore bodies, there is a much narrower range of alternatives available for siting mine facilities. Mining laws require only that mine developers minimize the destruction of or damage to wetlands, to the extent feasible. In the case of the proposed Crandon mine, CMC selected a TMA site that would result in less wetland damage than more than 32 other potential sites. Also, at the request of DNR, CMC modified the design and orientation of the TMA in order to keep wetland impacts to a minimum.

In conclusion, to meet wetland protection requirements, the proposed mine project will need to address the requirements of NR 132 to meet State law, and those under Section 404 of the Clean Water Act, to meet Federal law.

78.

Q: Why does the DNR and Army Corps of Engineers approve the filling of wetlands for businesses and big money ventures but will not consider private citizen requests? It sometimes seems that wetlands will be arbitrarily established to make up for real wetlands filled in.

A: This question alleges a bias in DNR against approving private citizens' requests for permits for wetland destruction. We believe we fairly evaluate all wetland alteration requests, and our goal is to find solutions that minimize or avoid wetland impacts. As the previous answer mentions, there are some wetland impacts which cannot be avoided. Highway construction, for example, results in some impacts to wetlands that are unavoidable. Our administrative rule on wetland protection (NR 103) requires that alternative sites be evaluated for locating parking lots, subdivisions, factories, and other general land development, and that wetlands not be destroyed when that proposed use of land is not "wetland dependent."

The Army Corps of Engineers makes its federal wetland decisions using a different set of guidelines than the Department. Currently the Department does not have a policy that requires permit applicants to create wetlands when others are destroyed. However, the Army Corps of Engineers does have such a policy, and would require the Crandon Mining Company to restore wetlands to compensate for those lost. The proposed wetland mitigation site was chosen based upon its size, availability, and restoration potential. The location is the site of a previously existing wetland that was drained for agricultural use, so its restoration is likely to be more successful than attempts to create wetlands where none previously existed. To some, it may seem arbitrary to create or restore wetlands, but restored wetlands do have definite natural resource and hydrologic values. Restored wetlands have been demonstrated to provide habitat for waterfowl, wetland mammals, other aquatic species, and shorebirds; allow for groundwater recharge in certain areas; and help retard flooding.

79.

Q: You should tell people that this mine isthe only U.S. mine in wetlands of this type.

A: The state legislature recognized that it made a trade-off when it made the policy decision that metallic mining is an important economic activity in Wisconsin, and that if mining is to be permitted, there may have to be some limited wetland disturbance. Ore bodies cannot be moved, but must be mined where they are located. As a result, the legislature determined that the presence of wetlands would not

necessarily preclude DNR from permitting a mining project, but we have to show that the mining plan *minimizes* impacts to wetlands. If the Crandon proposal were approved, approximately 30 acres of wetlands would be destroyed by the development, while additional wetland acreage would receive secondary or indirect effects. Our environmental impact statement will fully evaluate the impacts to project area wetlands.

We have not evaluated whether this would be the only U.S. mine in wetlands of this type, because that is not relevant to our review process. Rather, our review must determine whether this mine in these wetlands would meet all of Wisconsin's environmental laws and regulations.

Liability

80.

Q: What is the size of the bond? The trust fund? Who would have authority to authorize expenditures from it, under what conditions or restrictions?

A: The size of the reclamation bond would be determined by the cost in any one year (for the entire project duration) to reclaim the mining site should the company be unable or unwilling to reclaim the site. In similar fashion, the trust fund would be sized so that the amount of money in the fund would be sufficient to cover costs associated with reasonably anticipated preventative measures as well as remedial actions related to unanticipated events. Every five years after permit issuance or more frequently, if there have been significant changes at the site, the Department is required to review the adequacy of the fund, and if necessary, require appropriate adjustments to the fund. The actual amount of money and when payments are placed in the trust would be decided at the Master Hearing. The DNR would be named as the sole beneficiary of the trust funds and would control when withdrawals could be made. The trust fund would be used if the Department determined that remedial actions were needed and the permittee was not legally responsible for the problem, if the permittee and its successors were financially incapable of correcting the situation, or if immediate actions were necessary.

81.

Q: The DNR is charged with protecting Wisconsin's resources, and there was talk in DNR of an insurance policy "if there is a disaster." If the DNR is logically considering insurance before the permit is issued, where is our protection? Establishing a trust fund may appear to be establishing a safeguard for all time - Sounds to me like Exxon's record of fulfilling its obligations is well known - and that we all know they cannot be trusted!! Why should a trust fund be needed?

A: The intent of the proposed administrative rule change (to Chapter NR 132, Wis. Admin. Code) to create a trust fund is to provide a back-up source of funds to pay for preventative actions or for remedial measures associated with environmental contamination. Because of the rigorous permitting process, the Department expects that any mine which receives approval would not require environmental attention, other than monitoring and periodic maintenance. If an environmental problem were to arise, the Department would first rely on existing liability laws which place the primary responsibility on the mine operator before it would use the monies in the trust account. Those same laws on liability would be relied upon by private parties who believe the mine has harmed them. The establishment of such a fund cannot of course prevent environmental problems, but it can help ensure that the public would not be stuck with the costs of any mining-caused damage.

Private parties would not have access to the trust fund. However, if the claims of those private

parties are associated with environmental damage, the Department could use the trust fund to address the remediation of that damage. In addition, should damage to an individual's water well occur from mining, the state would require the mining company to remedy the problem. There also is a mining damage fund described in sections 107.30-107.35, Wisconsin Statutes, that establishes a process for individuals to file claims against mining companies for injury to a person or property. The Mining Impact Fund also has discretionary funds to compensate municipalities for mining-related damages.

82.

Q: Can Exxon legally be held to the clean-up when the Crandon mine company folds up/disburses? What if Crandon Mining Company goes bankrupt? Who does long term care?

A: Should CMC go out of business, the parent companies, Exxon and Rio Algom, would become legally responsible for the site. In addition, the bonds and other financial sureties held by the state are independent of the company, in that they are available to the state regardless of the solvency of the mining company. In the case of the sale of the mining operation, the new owner assumes all responsibility for operation and reclamation of the site and must post replacement bonds with the state prior to release of the original permittee. However, the original operator could still be held liable for costs related to environmental contamination which occurs as a result of its actions. CMC or its successor company is responsible for long term care. An owner's responsibility for management of a mining waste site never ends.

83.

Q: Should there not be any need to use the life perpetual trust fund, does the Crandon Mining Company get the money back? Could the money in this fund ever be used for anything else?

A: The irrevocable trust fund which would be required if the proposed rule changes are adopted would remain in place until, in the opinion of the Department, the mining site no longer poses any threat to the environment. The proposed code is currently structured so that the company which pays into the fund is able to recover some of its contribution if the Department determines that the fund is no longer needed, or if the amount in the fund exceeds the amount needed to accomplish the purpose of the fund. The proposed code also specifies the uses for the fund; all of these relate to remedial or preventive actions at the mining site. At present, the exact language is still being debated by the Metallic Mining Council.

Drinking Water Well Inventory

84.

Q: Mr. Tans mentioned a water well inventory. How far away from the mine site will the wells be checked?

A: The main purpose of the water well inventory is to determine how many water wells could possibly be affected by the groundwater drawdown. The groundwater drawdown would be caused by continuous pumping from the underground mine to keep it from flooding. Our preliminary determinations are that the maximum extent of the groundwater drawdown would not extend further from the mine site than Swamp and Hemlock Creeks on the north and east, Pickerel Creek on the west, and St. John's Lake to the southeast. The potential impact area will be based upon the Department's review of the groundwater model, and will include an area large enough to extend beyond the area the model predicts as the maximum

area of impact or a "worst case" scenario. Although the model evaluation is not yet complete based upon a preliminary evaluation the area may extend to up to four miles from the project site.

Water wells that we believe would be affected by the project would have to be deepened, re-drilled or in some other way modified (by the company) to provide adequate quantity and quality of water before mining construction could begin. This would be a condition of the high-capacity well permit. In addition, because the groundwater drawdown would take several years to develop, we would be continuously monitoring progress of the drawdown. Should the drawdown be more extensive than predicted, the company would be required to take action on additional wells, if any, that could be affected.

85.

Q: Water in aquifers in this area tend to run from Northwest to Southeast. If my well in Suamico goes skanky after this mine opens up, will Exxon pay for a new well or bottled water for me? Will the drawdown of the aquifer affect water wells in the Crandon area?

A: The Department's actions in regard to damage to water supplies is governed by Wisconsin Statutes Chapter 293. As stipulated in Wi. Stats. Sec. 293.65(4)(d), "If the Department concludes after the hearing that prospecting or mining is the principal cause of damage to the private water supply, it shall issue an order to the operator requiring the provision of water to the person found to be damaged in the like quantity and quality to that previously obtained by the person."

As part of the High Capacity Well Permit, Crandon Mining Company (CMC), would be required to identify and obtain background water quality information on all the water supplies in the potential impact area, as discussed in Response #84. Suamico is located in Brown County some 70 miles southeast of the proposed project site. The groundwater drawdown is expected to extend at its maximum development no more than about 3 miles from the mine. This potentially impacted area does not extend to the City of Crandon. Your well in Suamico could not be affected by the proposed project.

The data submitted by CMC indicates that a number of water supplies would be impacted by drawdown caused by the mine de-watering. The Department will require CMC to correct any impact the project has on any water supply impacted by the mine activities. This may include deepening the affected wells, digging a new well, supplying treatment for an existing well, or supplying bottled water.

86.

Q: Regarding your Mining Information Sheet, "Protecting Groundwater at Mining Sites", page 3, <u>Damage to Private Water Supplies</u> This does not state what was in the Forest Republican Nov. 13, 1996 - Contract between the mine and Town of Nashville <u>If my well goes dry</u> - the mine states that I would have to have a well okayed, before construction, by the mining company or the Town. They will supply me with water but it doesn't say they would drill me a new well. If I sold my year round home to a new owner or even to my son, the Town or mine is no longer libel to the problem. Why is this information not in your information sheet?

A: The article in the Forest Republican on November 13, 1996 was a copy of the proposed agreement between the Township of Nashville and Crandon Mining Company (CMC). A portion of the agreement between the Town and CMC attempted to address some of the responsibilities the Town has under section 293.65(4) of the Wisconsin Statutes to provide an immediate alternative source of water to a person claiming damage to their water supply by the mining activity. The Department's responsibility granted under Chapter 293 of the statutes is not affected by this or any other local agreement. As stated in Response #85, the Department would require the replacement of any water supply damaged by mining activities, no matter who is the owner of the water supply at that time.

Mine Backfill

87.

Q: Would the tailings dumped back into the closed mine (21 million cubic yards) be treated with the same protection as the TMA off site?

A: Backfilling of underground mines is a common mining technique which provides for greater structural stability of the rock mass, thus allowing more complete and efficient ore removal. It is not regulated as a waste disposal activity. Thus, underground mines are not lined or covered with impermeable layers, as incorporated into the design of the tailings management area. The surrounding bedrock is much less permeable than the glacial materials surrounding the TMA site, and would provide a relative safe repository for the coarse tailings. However, proposals for backfilling are reviewed in a similar manner to waste disposal facilities in that extensive waste characterization studies are conducted and the applicant must demonstrate that the backfilled mine would not cause a violation of applicable groundwater laws and rules. If constructed, the backfilled mine would be extensively monitored to verify compliance with the groundwater standards.

88.

Q: If underground shafts will be backfilled after mining activity ceases, where will the tailings be stored in the mean time?

A: The process of backfilling the mined out stopes would begin very early in the life of the project (whenever the first stope is completed) and would continue throughout the operational phase of the project. Mining and backfilling would occur simultaneously during the mining operation. As one stope is being mined, a nearby stope would be receiving backfill. Until the first stope is ready to receive backfill, the whole tailings would be directed to the TMA. Once backfilling begins, the coarse fraction of the tailings would be directed to the mine as backfill and the fine portion would be piped to the TMA.

Project Acreage

89.

Q: How many acres total does the Crandon Mine Company own?

A: Information provided in Crandon Mining Company's (CMC) Mine Permit Application (MPA) and Environmental Impact Report (EIR) states that within CMC's defined project area, approximately 2,200 acres of surface land is held in fee by CMC; the company also has options to purchase approximately 1,800 additional acres, and holds easements on approximately 10 acres. Within the project area, CMC estimates that approximately 540 acres would be disturbed during construction of the mine site. Of the 540 acres of disturbance, approximately 195 acres would be disturbed for construction of the plant site, access road and railroad corridors and approximately 345 acres would be disturbed for construction of the Tailings Management Area (TMA). The remaining acreage owned by CMC would serve as a buffer zone for noise and aesthetic purposes. Of the 540 acres disturbed during construction of the mine site, approximately 40% would continue to support various levels of vegetation during the mine operation period.

Subject to DNR approval Forest County will transfer ownership of approximately 1000 acres of county forest land for CMC's TMA and buffer area in exchange for 1,396 acres of replacement lands owned by CMC. In addition, CMC has an option to purchase approximately 100 acres in Shawano and Oconto Counties for wetland replacement (57 acres would be converted to wetland) and they plan to obtain approximately 37 miles of easements for the proposed discharge pipeline.

Other Mining Examples

90.

Q: The DNR confirmed the fact there are no examples of a successfully reclaimed metallic sulfide mine where the mine is closed, the water treatment plant is shut down, and the water runs pure and clean. Does the DNR think that current technology is sufficient to protect the state from mining pollution?

A: Department specialists still have to complete a significant part of the lengthy, ongoing review before any judgements can be made about whether the proposed pollution control technologies are sufficient to protect our environment. Both the DNR and the mining company recognize that there are still some difficult conditions that would have to be met regarding groundwater protection and maintenance of surface water flows. CMC is developing a surface water mitigation plan that Department staff will review, and many other facets of the proposed mine are still under review. The written decision on whether the proposed mine would meet all applicable environmental protection standards will be made after completion of the Master Hearing. We expect that to be near the end of 1999 or later.

91.

Q: Have you heard about the recent case where DuPont permanently withdrew a proposal for a mine site in the Okefenokee Swamp? Was it due to a legitimate concern for the environment in such a delicate ecosystem, or was it due to the impossibility of conforming to environmental protection laws and liabilities?

A: Our staff spoke with mining regulation specialists in both Florida and Georgia to answer this question. There is an existing DuPont Corporation metallic mineral mine near the Okefenokee Swamp in Florida. Mining regulators there expressed no concerns with its operation, and its operation continues.

In Georgia, DuPont has purchased rights in land covering a reported 28,000 acres, east of the existing Okefenokee National Wildlife Refuge. Company officials have discussed the concept for a titanium ore mine with Georgia mining regulators and residents of the region. They have made public presentations on the mode of operation and planned reclamation activities at their Florida mine. Residents of the region are expressing concerns about the potential air and water pollution, wetland damage, and noise.

However, far from permanently withdrawing their Georgia mine proposal, DuPont has yet not even applied for permits. Without information on the exact nature of the proposed ore separation, mining regulators cannot judge whether the mining operation would meet environmental protection standards. The company is trying to address public concerns before it initiates the application process. Meanwhile, a concerned DuPont stockholder is trying to put the issue of permanently abandoning the mining proposal to a vote by all stockholders.

The nature of the ore body and the mining method (the "mine" would consist of a huge dredge processing the ore from an extensive sand ridge) are completely dissimilar to that at Crandon. Georgia's

natural resource protection laws also vary in significant ways from Wisconsin's.

The Mine's Effect on People and Tourism

92.

Q: We all know Exxon's past record. We also know they were court ordered to pay $5 billion dollars to the communities at Prince William Sound years ago. They have not paid. How will Wisconsin tourism, a $6 billion dollar industry, survive if the tailings pollute Wisconsin?

A: The DNR is obligated to conduct a thorough and comprehensive review of the proposed project to determine if it could comply with all of the environmental protection requirements, including all surface and groundwater protection standards. If the project were approved, there would be intensive environmental monitoring of the project to determine whether the projected impacts to the natural resources are comparable to the actual impacts. Should actual impacts be worse than anticipated, and analysis indicated that standards could be violated if the project continued, the company would have to implement its contingency plan and correct the problem. We believe that the state's comprehensive environmental protection requirements are adequate to prevent pollution; therefore, there should be no negative effects on tourism due to environmental consequences of the mine.

93.

Q: The Wolf River is now considered an endangered river. Why hasn't this halted the project?

A: The term "endangered river" was used by a private organization to describe the river, and the term has no legal standing in the permitting process. CMC has proposed no direct discharges to the Wolf River or its tributaries and the applicable rules and standards would prevent any significant deterioration of surface water quality as the result of indirect discharges via groundwater or surface runoff. If the Department concludes after completion of our review of the proposal that the proposed design will not comply with these rules and standards, then no mining permit could be issued.

94.

Q: What are citizens going to gain with this mine?

A: The question of what do citizens have to gain from the proposed mine is not a criterion we evaluate in reviewing the project. Presumably the legislature asked that question during the policy debates about mining that have taken place in the past 25 years. Consider the following statements made by different legislatures:

The legislature recognizes that the prospecting for and the mining of minerals which are limited in quantity and restricted in occurrence is a basic and essential activity making an important contribution to the economic well-being of the state and nation. At the same time, proper reclamation of land disturbed by prospecting or mining is necessary to prevent environmental pollution, including undesirable air, land and water conditions that would be detrimental to the property rights, health, safety and general welfare of the citizens of the state. The purpose of this act is to provide that the air, lands, waters, plants, fish and wildlife affected by prospecting and mining in this state will receive the greatest practicable degree of protection and reclamation. (Legislative Findings for Chapter 318, Laws of 1973).

It is declared to be the purpose of this act to prevent adverse effects to society and the environment resulting from unregulated mining operations; to ensure that the rights of surface landowners and other persons with a legal interest in the land or appurtenances to the land are protected from unregulated mining operations; to ensure that mining operations are not conducted where reclamation, as required by this act, is not possible; to ensure that mining operations are conducted so as to prevent unreasonable degradation to land and water resources, and to ensure that reclamation of all mined lands is accomplished as contemporaneously as practicable with the mining, while recognizing that the extraction of minerals by responsible mining operations is a basic activity making an important contribution to the economic well-being of this state and nation. (Statement of Purpose, Chapter 421, Laws of 1977).

Ore Mining & Treatment

95.

Q: What happens to all of the chemicals used in the separation process?

A: The chemicals used in ore concentration would either remain in solution in the recycled mill process water or would be removed from the system by adhering to the concentrate or the tailings material. The ultimate fate of the chemical would be dependent on the characteristics of the chemical. Some of the reagents used are readily biodegradable and would not persist in the tailings pond while others would attach to the various minerals in the tailings and ultimately be disposed along with the tailings.

96.

Q: In the 1980s Exxon wanted to mine uranium. Will the mining permits that Exxon currently seeks also include mining uranium this time?

A: The project proposed by Exxon Coal & Minerals Co. in the 1980s did not include uranium mining. Studies of the Crandon ore body indicate that it contains only background levels of radioactive minerals and does not contain minable concentrations of uranium. The mining plan specifies that this mine and mill would produce concentrates of copper, lead and zinc, and this would be similarly reflected in the mining permit if it is issued. Similarly, the approval of the TMA, if issued, would specify the types of tailings materials which could be disposed of in the facility. If the company wanted to mine, mill or dispose of a different type of material, additional plans would need to be developed and the permits and approvals would need to be modified. The modification procedure includes opportunities for public review and could include a hearing.